CITY OF EXETER
WATER SYSTEM MASTER PLAN

August 2019

Great Communities. Healthy Environments. By Design.

CITY OF EXETER
WATER SYSTEM MASTER PLAN

Prepared for:

City of Exeter
100 North C Street
P.O. Box 237
Exeter, California 93221

Consultant:

901 East Main Street
Visalia, California 93292
Contact: Lisa Wallis-Dutra, PE, TE, PTOE, RSP
Phone: (559) 733-0440
Fax: (559) 733-7821

August 2019

Project #180276

ACKNOWLEDGEMENTS

The City of Exeter and QK would like to thank the stakeholders for participating in the process and contributing to the development of the City's 2019 Water System Master Plan. The successful completion of the plan was accomplished with the active participation and input from the various team members.

Exeter City Council
Mayor Mary Waterman-Philpot
Mayor Pro Tem Barbara Sally
Frankie Alves
Dave Hails
Jeremy Petty
Dale Sally, Past Council Member
Gorden Gerdes, Past Council Member
Teresa Boyce, Past Council Member

City of Exeter Staff
Adam Ennis, PE, City Administrator
Daymon Qualls, Director of Public Works
Daniel Espinola, Public Works Operations Manager
Greg Collins, City Planner
Lisa Wallis-Dutra, PE, TE, PTOE, RSP, City Engineer

Table of Contents

List of Appendices

List of Figures

List of Tables

LIST OF ACRONYMS

EXECUTIVE SUMMARY

The City of Exeter has recently faced some very challenging times with its water system. Numerous issues have come to light in recent years including meeting the needs of the community, complying with legislative demands, and planning for the continued orderly growth of the City.

It has become apparent that the existing water system including the distribution system, supply, and storage are not adequate to meet peak demands and maintain customer satisfaction as all communities strive to do. Providing a reliable and quality drinking water system in the Central Valley in the recent years has required many similar communities in the region to review and upgrade their systems to meet the standards required by the California Waterworks Standards (CWS) analysis criteria taken from Title 22 of the California Code of Regulations. In many cases, water providers have had to adapt through either treatment or development of new water sources to meet the water quality requirements with the introduction of new Maximum Contaminate Levels (MCL) for contaminates.

The following executive summary presents an overview of this Water System Master Plan (WSMP).

Project Overview

In 2003, the City adopted a General Plan that provides guidance for physical development of the City within its Urban Development Boundary through year 2020. In 2008, the City developed a WSMP identifying existing water system deficiencies, as well as needed improvements to provide reliable water service to both existing and future development. The City is now undertaking the task of updating the 2008 WSMP to reflect current conditions, as well as plan for future growth to year 2030.

The 2019 WSMP provides the City of Exeter with a tool for planning its water system through the year 2030. The WSMP accommodates the growth to the northeast, northwest, and southwest areas within the Urban Development Boundary in the General Plan. The plan will also include discussion of the following items:

1. Evaluation of Existing Water System;
2. Establishment of Existing and Future Water Demand Scenarios;
3. Evaluation of Connection to Tooleville;
4. Discussion of Hydraulic Model Results;
5. Evaluation of Existing Water Quality;
6. Identification of Deficiencies and Operational Enhancements; and
7. Capital Improvement Program.

Background

The City of Exeter is located in Tulare County in the southeastern portion of the San Joaquin Valley, approximately 12 miles east of the City of Visalia. The City is bisected by State Route (SR) 65, which runs north and south, and is located approximately one and one-half miles south of SR 198. The City's water supply is extracted from groundwater aquifers using a series of wells that are located throughout the City. In 1911, the City of Exeter started water service to the community by drilling two small wells and constructing a 100,000-gallon elevated tank for storage. The City's existing water system includes six active wells, all with chlorination treatment facilities, two inactive wells, one elevated storage tank with a capacity of 100,000 gallons, and approximately 47 miles of distribution pipelines.

Population and Water Demand Projections

In order to evaluate the water system for future water demands, the population needs to be projected. This report assumes build-out of the City in year 2030. The City's General Plan identifies a growth rate range from 1.88% to 2.88%. Actual growth over the last 20 years has been 1.23%. After discussions with City staff, it was determined the average growth rate of 2.38% should be used for this WSMP. The following figure shows the historical and projected population and water production based on the rationale provided in Chapters 1 through 4.

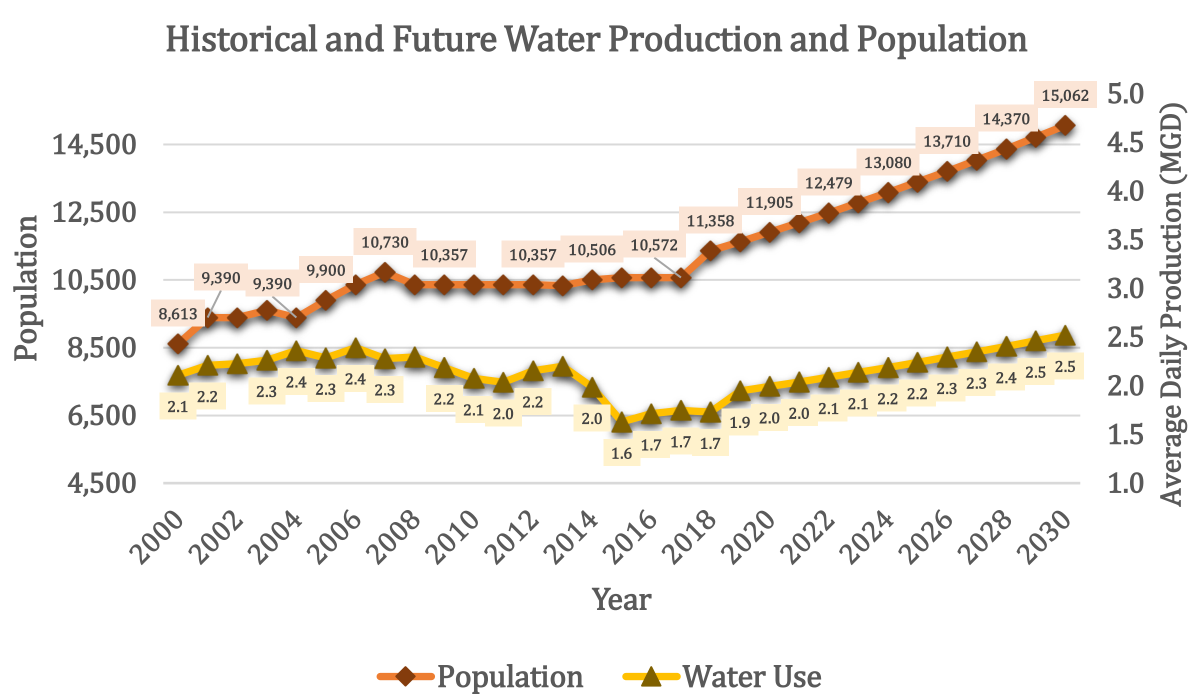


Figure 1
Historical and Future Water Production and Population

Hydraulic Water Model and Results

The software used to analyze the City of Exeter water system is WaterCAD by Bentley Systems. WaterCAD is a modeling tool that helps engineers design and analyze complex pressurized piping systems. WaterCAD enables the user to create and compare multiple demand scenarios for the water system that are based on proposed improvements, population growth, and as defined by the CWS.

Using the model and basic numerical comparisons, several deficiencies were identified in the existing and future systems. Some of the deficiencies should be addressed as soon as possible while others can be done in the future.

- Existing System Well Capacity – The existing system does not have adequate ground water source capacity to supply the existing Maximum Day Demand (MDD). It is recommended that one or more wells be constructed as soon as possible with a cumulative capacity of 1,100 gpm.
- Existing Water Pressure – Typical distribution systems maintain a minimum of 40 psi during MDD conditions. Residential areas with pipes of 6" or less had pressures as low as 36 psi during existing MDD model simulation. Most low-pressure readings from the model occurred in the northeast section of the City, north of Firebaugh Avenue and east of State Route 65.
- Existing System Storage – The existing system currently uses an elevated water tank to supply additional capacity and to help balance pressures in the system. The tank capacity is not sufficient on its own to supply existing Peak Hour Demand and Fire Flow requirements. Also, as the tank level drops, the ability to supply additional pressure to the system is reduced. Additional storage is needed.
- Future System Well Capacity – The future system does not have adequate capacity to supply the projected Maximum Day Demand. It is recommended that one or more wells, to be planned in conjunction with development, be constructed by year 2030 with a cumulative capacity of 2,250 gpm. Depending on the condition of the existing wells between now and year 2030, this number will likely need to be verified.
- Future Water Pressure – The model shows by year 2030, several areas would benefit from additional pipelines or loops. These areas are further described in Chapter 7.
- Future System Storage – The condition of the existing elevated tank is hard to predict for the year 2030, and as it stands, there is a projected shortage of source water, which will require additional storage beyond the existing tank. It is recommended that the City construct a tank with a volume of 500,000 gallons (.5 MG). Ideally, the tank will be constructed in the near future to remedy the existing shortage, allow expansion of the City, and provide piece of mind during an emergency.

Water Quality and Water Conservation

Chapters 8 and 9 summarize some of the current water quality regulations and water conservation measures that apply to the City.

Capital Improvement Program

A Capital Improvement Program (CIP) is a short-range plan, usually four to 10 years which identifies capital projects and equipment purchases, provides a planning schedule, and identifies financing options for the plan. Chapter 10 of this WSMP provides recommendations for projects that address existing needs as well as those improvements anticipated to support development in the City. The City can then use this data to make informed decisions about project priority, funding, and timelines to establish a CIP.

SECTION 1 - INTRODUCTION

1.1 - Background

The City of Exeter (City) is in Tulare County in the southeastern portion of the San Joaquin Valley, approximately 12 miles east of the City of Visalia. The City is bisected by State Route (SR) 65, which runs north and south, and is located approximately one and one-half miles south of SR 198. See Figure 1-1, Regional Location Map. The City's water supply is extracted from groundwater aquifers using a series of wells that are located throughout the City. In 1911, the City of Exeter started water service to the community by drilling two small wells and constructing a 100,000-gallon elevated tank for storage. The City's existing water system includes six active wells, all with chlorination treatment facilities, two inactive wells, one elevated storage tank with a capacity of 100,000 gallons, and approximately 47 miles of distribution pipelines.

In 2003, the City adopted a General Plan that provides guidance for physical development of the City within its Urban Development Boundary through year 2020. In 2008, the City developed a Water System Master Plan (WSMP) identifying existing water system deficiencies, as well as needed improvements to provide reliable water service to both existing and future development. The City is now undertaking the task of updating the 2008 Water System Master Plan to reflect current conditions, as well as plan for future growth to year 2030.

1.2 - Authorization

The Exeter City Council authorized preparation of this 2019 WSMP Update (based upon the City's 2008 WSMP) in June 2018. The 2019 WSMP shall be used to serve as a guide for water utility capital planning, to recommend priorities for system replacement and improvements, to provide design criteria for developers and the City, and to serve as a basis for development of impact fees and user rate considerations.

1.3 - Scope of Work

The 2019 WSMP provides the City of Exeter with a tool for planning its water system through the year 2030. The WSMP accommodates the growth to the northeast, northwest, and southwest areas within the Urban Development Boundary in the General Plan. The plan will also include discussion of the following items:

1. Evaluation of Existing Water System;
2. Establishment of Existing and Future Water Demand Scenarios;
3. Evaluation of Connection to Tooleville;
4. Discussion of Hydraulic Model Results;
5. Evaluation of Existing Water Quality;
6. Identification of Deficiencies and Operational Enhancements; and
7. Capital Improvement Program.

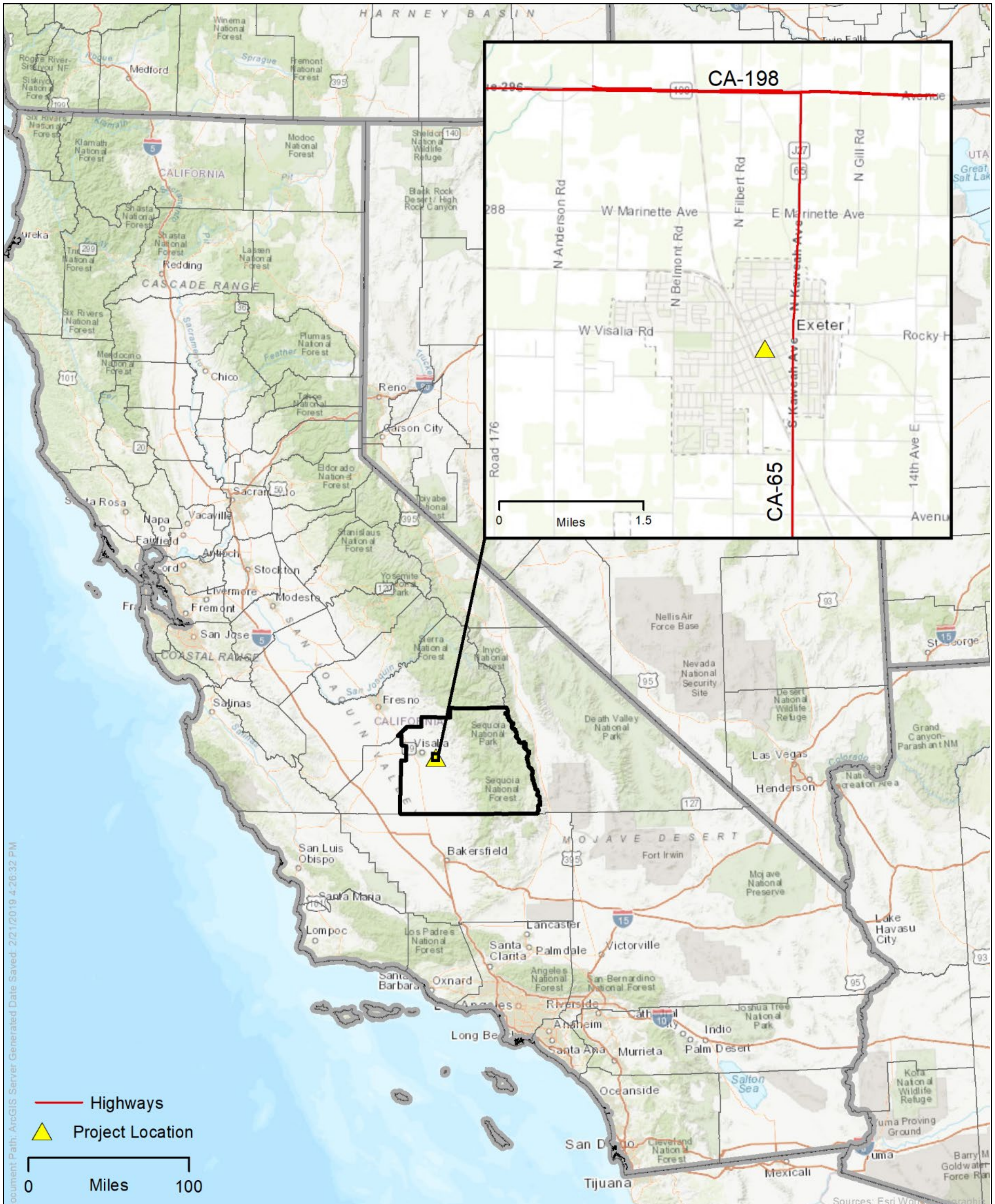


Figure 1-1
Regional Location Map

SECTION 2 - PLANNING AREA CHARACTERISTICS

2.1 - Population

In order to evaluate the water system for future water demands, the population needs to be projected. This report will assume build-out of the City in year 2030. The City's General Plan identifies a growth rate range from 1.88% to 2.88%. Actual growth over the last 20 years has been 1.23%. After discussions with City staff, it was determined the average growth rate of 2.38% should be used for this WSMP.

Table 2-1, Projected Population shows the projected population for each year starting in 2017 to year 2030. The 2017 population was provided by the California Department of Finance. The 2030 population is projected to be 15,062. This population will be used to project future water demand.

Table 2-1
Projected Population

Year	Population
2017	11,094
2018	11,358
2019	11,628
2020	11,905
2021	12,188
2022	12,479
2023	12,776
2024	13,080
2025	13,391
2026	13,710
2027	14,036
2028	14,370
2029	14,712
2030	15,062

2.2 - Study Area

Exeter's General Plan identifies a 20-year planning boundary within which urban development is expected to occur over the plan period. Since Exeter has grown more slowly than originally projected in the 2020 General Plan, it is assumed that the planning boundary will not need to be expanded during the life of this Master Plan, which is through the year 2030. The Tulare County Local Agency Formation Commission (LAFCo) has adopted a Sphere of Influence for Exeter that is very similar in location to the 20-year planning boundary. City staff has determined that the Sphere of Influence is appropriate for the Study Area for this project. The Study Area is shown in Figure 2-1.

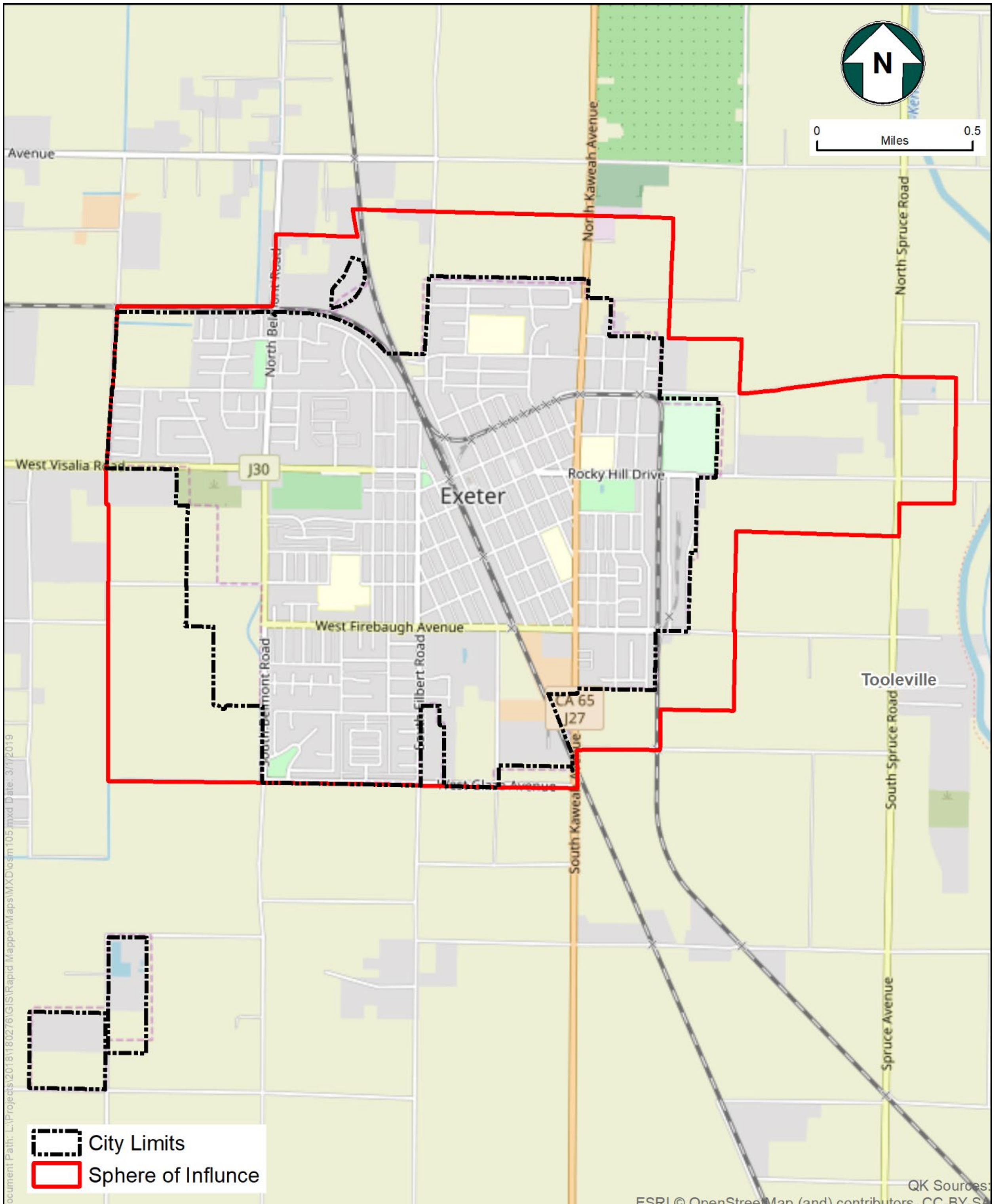


Figure 2-1
Study Area

2.3 - Land Use

The type of land use affects the demand for water of a particular parcel. For the purposes of determining the size and extent of the water distribution system, the existing land use was used for developed sites and the General Plan land use designations were used for underutilized and vacant (both undeveloped and agricultural) sites. The developed status of sites was determined based on a survey conducted in November 2018.

The existing developed land inside the study area consists of about 912 acres. Table 2-2 shows the acreages of existing developed sites by land use type and Figure 2-2 shows the location of the existing land uses on a map.

Table 2-2
Existing Developed Acres

Existing Use – 2018	Developed Acres
Residential	599.58
Residential (High)	12.33
Commercial	50.66
Industrial	105.93
Public	144.04
TOTAL	**912.54**

Underutilized and vacant land are shown by acreage based on their General Plan land use designation in Table 2-3. Underutilized land, which is land that is developed but not to its fullest capacity, comprises about 129 acres. Vacant land comprises about 798 acres. These acreages are broken down by General Plan land use designations in Figure 2-3. Figure 2-4 shows which areas were determined to be developed, underutilized, vacant, or agricultural land.

Table 2-3
Underutilized and Vacant Land Uses

General Plan Land Use	Underutilized Acres	Vacant Acres	Total
Very Low Density	11.25	5.28	**16.53**
Low Density Residential	18.18	61.66	**79.84**
Medium Density Residential	19.82	172.13	**191.95**
High Density Residential	0.34	9.64	**9.98**
Central Commercial	5.02	0.21	**5.23**
General Commercial	11.34	6.44	**17.78**
Service Commercial	6.23	4.7	**10.93**
Professional Office	0.60	55.55	**56.15**
Industrial	10.75	77.74	**88.49**
Planned Industrial	2.14	33.41	**35.55**
Open Space	0.29	19.93	**20.22**
Urban Reserve	43.17	350.87	**394.04**
TOTAL	**129.13**	**797.56**	**926.69**

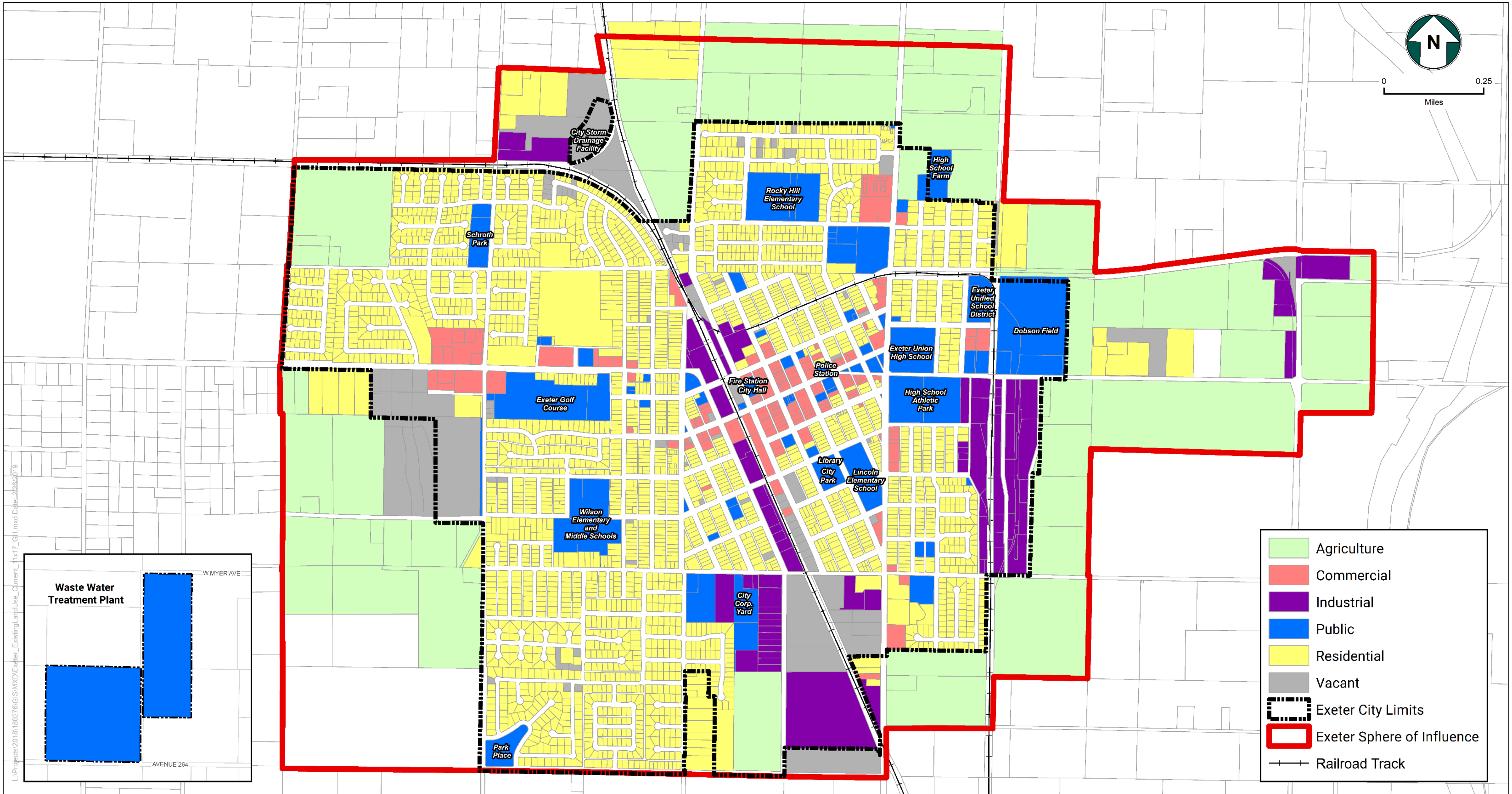


Figure 2-2
Existing Land Use

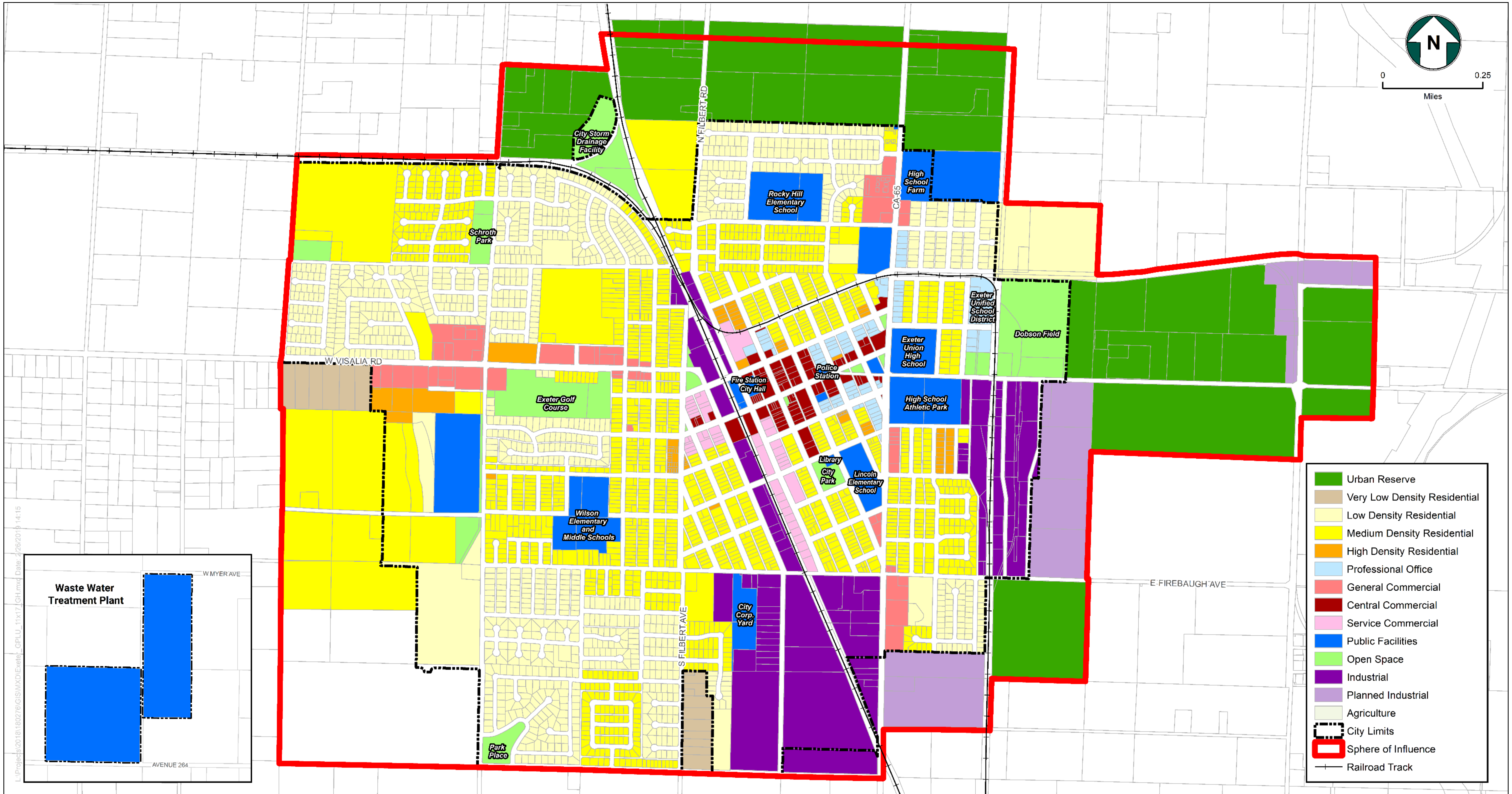


Figure 2-3
Exeter General Plan Land Use Designations

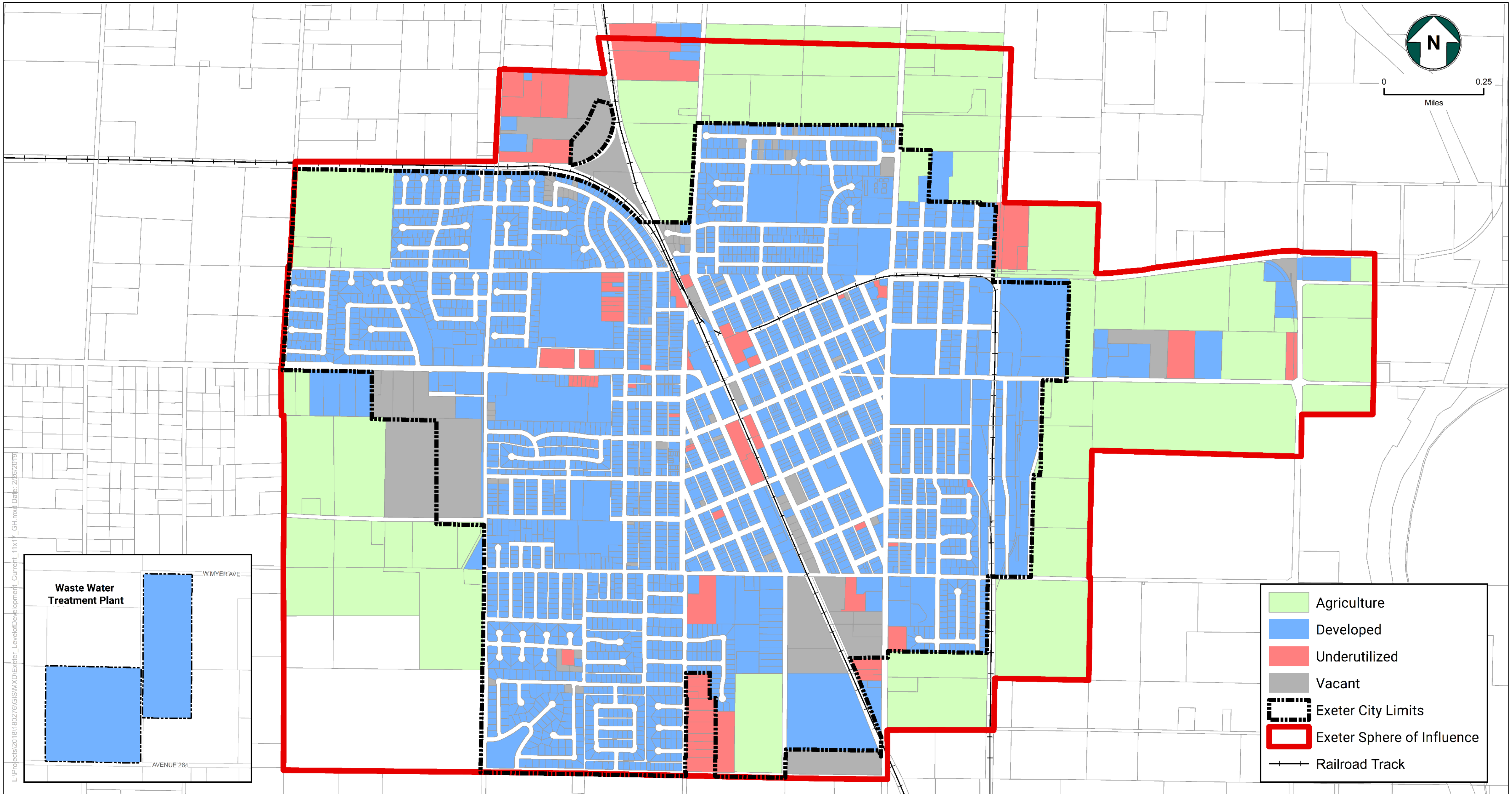


Figure 2-4
Developed, Underutilized, Vacant, and Agricultural Land

SECTION 3 - EXISTING WATER SYSTEM

Exeter's domestic water supply needs are served by a City owned and operated water system. The system consists of water wells to supply groundwater, a network of pipes to distribute the water, and storage facilities to regulate pressure and provide storage volume. Appendix A contains a full-size 24" x 36" map of the overall existing water system features.

3.1 - Existing Water Supply

There are six active wells (E6W, E9W, E11W, E12W, E13W, and E14W) and two inactive wells (E5W and E10W) located throughout the City. Each of the wells are fitted with either a vertical turbine pump or a submersible pump. Individual pump output varies from less than 200 gallons per minute (gpm) to over 1,100 gpm. Recent pump test data from 2018 is summarized in Table 3-1 (Southern California Edison pump test results can be found in Appendix B). The oldest active well is E9W, built in 1964 and the most recent well is E14W, installed in 2007. The overall standing water level varies in different areas of the City, but presently ranges from 82 to 138 feet. Pump drivers or electric motors range from 75-150 horsepower (hp). The computer control system automatically controls the sequences of starts/stops for all the wells based on the level of the elevated storage tank at Pine Street and Kaweah Avenue (SR 65), as well as system parameters of flow and pressure. See Appendix C for well completion reports of the existing wells.

Table 3-1
City of Exeter Well Production (2018)

Well No.	Location	Year Built	Depth (ft)	Power (hp)	Normal Flow (gpm)
E5W	Alley Between E Street and F Street, North of Willow Street	1956	456	Inactive	
E6W	Intersection of G St and Palm St in a Park	1973	400	75	611
E9W	West of Albert Ave and North of Visalia Rd	1964	292	75	439
E10W	East Side of G Street, Approx. 1000' south of Firebaugh Avenue	1980	425	Inactive	
E11W	West of Belmont Rd and North of Visalia Rd	1987	425	75	751
E12W	West of SR 65 at Northern Boundary of City in Northeastern part of City	2002	615	100	206
E13W	Intersection of Belmont Rd and Glaze Ave in a Park	2006	580	150	1,132
E14W	East of Belmont Rd and North of Atwood Ave	2007	555	100	186

In general, well production has been decreasing since the wells were constructed. Although a decrease over time is not uncommon, reasons for such deterioration could be the lowering of groundwater, clogging of well screen or nearby strata, split pump bowls, or worn impellers. For example, the groundwater table near E13W has dropped from 97 feet in 2005 to approximately 138 feet in 2018. This drop has caused a decrease in flow from E13W from 1,500 gpm to 1,132 gpm. It can be seen in Table 3-2 that all wells have seen a decrease in performance since 2008, some more severe than others.

Table 3-2
Well Capacity Comparison (2008 to 2018)

Well No.	Previous Flow in 2008 (gpm)	Existing Flow in 2018 (gpm)	% Reduction
E6W	1,130	611	46%
E9W	794	439	45%
E11W	1,051	751	29%
E12W	250	206	18%
E13W	1,500	1,132	25%
E14W	550	186	66%
Total	**5,275**	**3,325**	**37%**

3.2 - Existing Distribution System

Exeter's water distribution system consists of supply lines that are laid out in a grid-like manner so that there are no dead ends of major mains. This process is also known as "looping". Looping avoids dead ends in the lines where water can stagnate. Also, when repairs are required, water can be rerouted around the repair through another part of the loop. Additionally, head loss is minimized in a gridline system during Peak Hour Demands or Fire Flow Demands. Water distribution mains carry water from the wells to the demand point. Exeter's distribution system was designed and constructed as the town expanded. As development occurred along the edges of the town, pipelines were extended, new wells were drilled and new transmission mains from the wells were connected to the existing distribution system. The existing distribution pipes range from 1" to 12" in diameter. The older water mains are primarily AC, steel, and cast-iron pipes. In 2004, the City replaced approximately 7 miles of the old AC, steel, and cast-iron pipes with C-900 polyvinyl chloride (PVC) pipes. Also, 4" water mains were upgraded to 6" in select portions of the system. The distribution system is within one pressure zone ranging between 40 and 60 psi. With the exception of some governmental sites owned and operated by the City, all service connections are metered.

3.3 - Existing Water Storage Capacity

The system's pressure regulation and storage needs are provided by a 100,000-gallon elevated steel tank located at Pine Street and Kaweah Avenue, in the northeast quadrant of the City (See Figure 3-1).

Figure 3-1
City of Exeter Elevated Storage Tank

There is also a hydropneumatic tank located at each of the active wells except E13W and E14W. The hydropneumatic tanks do not provide any significant storage. They are used to dampen surges in the system and to provide system pressure feedback to the well controls. A typical well layout can be seen in Figure 3-2, City of Exeter Well E9W.

Figure 3-2
City of Exeter Well E9W

3.4 - Existing System Operation Controls

Well pumps are controlled by pressure switches that regulate the "on/off" status of the pumps. These pressure settings were developed by the City staff for turning the pumps on and off to maintain an average City-wide pressure during varying demands. The low settings will turn the pumps on to maintain a constant safe operating pressure throughout the system, while the high settings will turn the pumps off to prevent high pressures from damaging distribution mains, their appurtenances, and customer's plumbing fixtures. The wells are regulated by a Rugid computer at the elevated storage tank site. The trigger for which well will be pumping is determined by the water level in the storage tank. The Rugid computer is currently programmed to use E11W as the lagging pump while the lead pump varies depending on operator input. During the winter months, water demand is low and the City typically operates five wells. During summer months all six operating wells are used. Figure 3-3 shows the Rugid computer in the control panel located at the elevated storage tank.

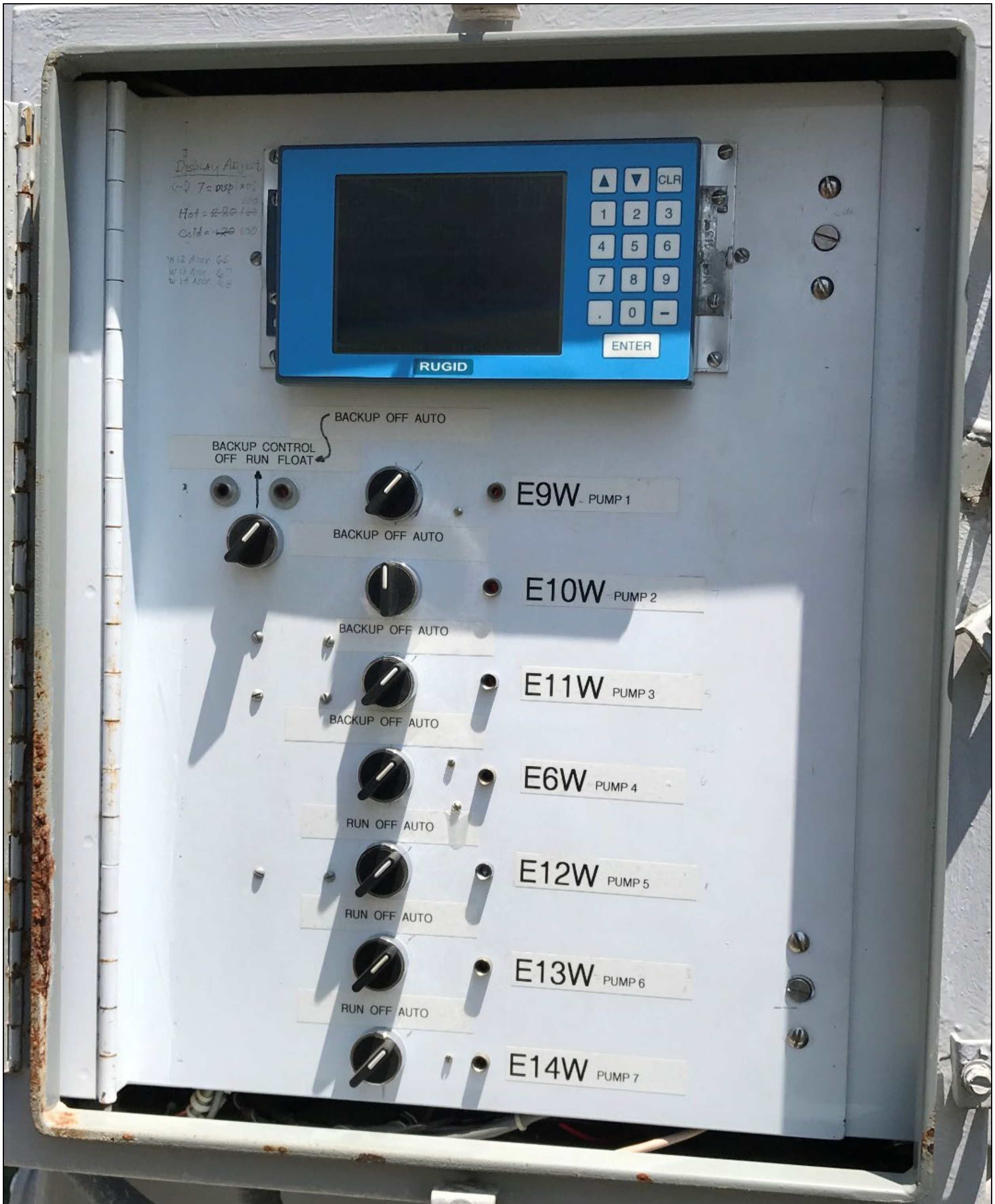


Figure 3-3
Rugid Computer Controls Located at the Elevated Storage Tank

SECTION 4 - WATER SYSTEM EVALUATION

4.1 - Historical and Existing Water Demands

Water consumption and water loss are trackable quantities that have gained attention in recent years. During the recent drought, water providers were mandated by the State of California to reduce consumption through measures of conservation. Water providers then looked to system water loss as another way of reducing demands. Ideally, if the source of loss could be identified and mitigated, overall water usage could be reduced.

The total water produced by the wells and the total water metered over the last five years is summarized in Table 4-1 below. Also shown is the calculated water loss for each year. Well pumping records and metered water usage records from the City are found in Appendices D and E, respectively.

Table 4-1
Actual Water Produced vs. Water Metered – Water Loss (%)

Year	Population	Total Water Production (gallons)	Total Water Metered (gallons)	Average Day Demand During Max Month (gpm)	Water Loss (%)
2014	10,506	724,856,908	591,395,384	1,709	18%
2015	10,572	594,657,304	525,699,285	2,183	12%
2016	11,094	625,786,096	540,011,819	1,545	14%
2017	11,094	637,593,867	582,763,994	1,892	9%
2018	11,094	631,604,276	591,497,815	1,656	6%

The US Environmental Protection Agency (EPA) and the American Water Works Association (AWWA) have estimated that "as much as 18% of water might be lost each year to leakage, metering inaccuracies, data handling errors, and unauthorized consumption," amounting to "approximately 5.9 billion gallons per day" (CNT 2013). Based on the water pumped versus water metered data provided by the City, the water loss has been reduced from 18% to 6% over the last five years. While these numbers are not ideal, they are generally less than the range provided by the EPA and AWWA compared to other water providers in the Valley, being under 10% water loss is a good goal.

Table 4-2 depicts the current well characteristics for all six operational wells. As shown, all active wells can produce a total of 3,325 gpm or 2,193 gpm with the largest source (E13W) offline.

Table 4-2
2018 Well Characteristics

Well No.	February 2008	Static Water Level (SWL) & Drawdown
E6W	Pomona 75 hp, 1800 revolutions per minute (rpm) Pumping Water Level = 141.4 Feet 611 gpm	SWL 131.9 Feet Drawdown = 9.5’
E9W	Pomona 75 hp, 1800 rpm Pumping Water Level = 124.7 Feet 439 gpm	SWL 117 Feet Drawdown = 7.7’
E11W	Floway 75 hp, 1800 rpm Pumping Water Level = 135.6 Feet 751 gpm	SWL 113.5 Feet Drawdown = 22.1’
E12W	Berkeley 100 hp, Variable rpm Pumping Water Level = 331.3 Feet 206 gpm	SWL 119 Feet Drawdown = 212.3’
E13W	Floway 150 hp, Variable rpm Pumping Water Level = 185.2 Feet 1,132 gpm	SWL 138.4 Feet Drawdown = 46.8’
E14W	Floway 100 hp, 1800 rpm Pumping Water Level = 183.3 Feet 186 gpm	SWL 123.3 Feet Drawdown = 60.0’

Total Well Capacity = 3,325 gpm
Total Well Capacity (without the use of the largest source (E13W) = 2,193 gpm

It should be noted that the current water levels are all significantly lower than historic water levels. The depth to ground water in the late 1960s was approximately 80 feet. Table 4-2 shows the ground water depth to range from 117-138 feet. Historical groundwater levels averagely declined about 12 feet from 1970 to 2000. During 2005, the groundwater level dipped to 97 feet. The depletion continued significantly leaving the groundwater levels where they are today. One of the main reasons for such depletion was the lack of rainfall between 2011-2017. This decline in groundwater level requires the pumps to overcome the additional lift, ultimately providing less water than before.

4.2 - Water Peaking Factors and Demand Scenarios

A peaking factor is the ratio of one flow to another, usually the Maximum Day Demand to the Average Day Demand in a water system. Peaking factors can also be developed from land use water values from a general plan or by per capita water use. The peaking factor concept has been used in the drinking water industry for nearly 100 years and there are guidelines for calculating peaking factors in the California Waterworks Standards (Title 22). The following peaking factors were used to determine Maximum Day Demand (MDD) and Peak Hour Demand (PHD).

4.2.1 - Average Day Demand (ADD)

According to the California Waterworks Standards (CWS), the Average Day Demand (ADD) is computed by identifying the maximum monthly water usage during the most recent 10-year period. The City of Exeter only has five years of metered data available, so the ADD was found based on the most recent five years of data. The monthly usage is then divided by the number of days in the month. The maximum monthly water usage based on the last five years of metered data was found to have occurred in June 2015 (94,301,260 gallons) = 2,183 gpm.

4.2.2 - Maximum Day Demand (MDD)

The MDD represents the maximum consumption during any one day of the year. The maximum day peaking factor is expressed as a ratio of the MDD to the ADD. The CWS requires an MDD peaking factor of 1.5 or greater. 1.5 was used for the City of Exeter.

Maximum Day Demand = 1.5 x Average Day Demand = 1.5 x 2,183 gpm = 3,274 gpm

4.2.3 - Peak Hour Demand (PHD)

The maximum flow rate delivered by the distribution system during any single hour during the year corresponds to the Peak Hour Water Demand. According to the CWS, the PHD is calculated by applying a peaking factor of 1.5 or greater to the MDD. Peak Hour Demands typically occur during the morning hours. For Exeter, a peaking factor of 1.5 was used.

Peak Hour Demand = 1.5 x Maximum Day Demand = 1.5 x 3,274 gpm = 4,912 gpm

The values for the existing ADD, MDD, and PHD are summarized in Table 4-3.

Table 4-3
Existing Water Demand Scenarios

Maximum Monthly Usage (gallons)[1]	Population[2]	ADD During Max Month (gpm)	MDD (gpm)	PHD (gpm)
94,301,260	11,094	2,183	3,274	4,912

1. Per California Waterworks Standards, the maximum monthly water usage is determined from the past 10 years. Per the City's request, and due to recent water conservation efforts, all the water data that was metered for the past 5 years is being used. The maximum monthly usage was determined to be during June 2015.
2. 2017 population from Department of Finance.

4.2.4 - Per Capita Calculations

Table 4-4 shows the average usage and average production per capita per day and is based on the data available for the City.

Table 4-4
Per Capita Calculations

Average Annual Water Usage (gallons)[1]	Average Annual Water Production (gallons)[2]	Population[3]	Average Usage per Capita (gpcd)	Average Production per Capita (gpcd)
566,273,659	710,224,708	11,094	140	175

1. The City of Exeter only has 5 years of metered water usage data. This is the average annual usage over the past 5 years of metered data.
2. The City of Exeter has well production data going back to 1996. This is the average of the last 10 years of water produced.
3. 2017 population from Department of Finance.

Table 4-5 shows the average demand per capita per day for other cities in the area, some of which are similarly sized in population. Since the numbers are labeled as demands, it is unclear if the numbers are based on actual metered usage or water produced. The numbers range from 146 gallons per capita daily (gpcd) to 300 gpcd. As shown in Table 4-4, the City of Exeter's Average Water Usage and Production per capita per day were calculated to be 140 gpcd and 175 gpcd, respectively. These numbers are on the lower end but are within the range provided.

Table 4-5
Water Demand per Capita per Day for Other Water Providers

City	Average Water Demand per Capita per Day (gpcd)	Population
Exeter (Usage)	**140**	**11,094**
Farmersville	146	10,778
Woodlake	152	7,649
Exeter (Production)	**175**	**11,094**
Hanford	197	56,499
Delano	279	53,138
Chowchilla	280	18,558
Tulare	300	63,855

4.3 - Fire Flow Requirements

Water must be available not only for domestic use but also for emergency firefighting situations. This type of water use is called a fire flow, and the fire flow must be sustainable for a specific duration at a minimum pressure of 20 psi. General standards establishing the amount of water for fire protection purposes are set by the Insurance Services Office (ISO). The considerations such as type of occupancy, type of construction, materials, distance from other structures, and other factors can be considered when assigning fire flow requirements.

In lieu of calculating specific fire flows for individual structures, Tulare County refers to the California Fire Code Appendix B, which requires a fire flow of 1,500 gpm for any commercial, industrial, or residential home over 3,600 square feet. For this WSMP, any time a fire flow is referenced or modeled, it is at a rate of 1,500 gpm to ensure the requirement can be met at any location in the system.

4.4 - Future Water Demands

The future water requirements were analyzed using the population growth method. This method evaluates the future population growth and the water demand based on the projected population growth. Table 4-6 shows the projected population, annual water use, and demands for the different demand scenarios. Note that in all demand scenarios, the projections should be adjusted as development occurs, based on actual population.

Table 4-6
Project Population and Water Demand Projections to Year 2030

Year	Projected Population [1,2]	Projected Water Production (gallons per year)	Water Demand per Capita (gpcd)[3]	ADD (gpm)	MDD (gpm)	Max-Day Plus Fire Flow (gpm)	PHD (gpm)
2017	11,094	637,593,8674	157	2,183	3,274	4,774	4,912
2018	11,358	631,604,2764	152	2,232	3,348	4,848	5,022
2019	11,628	710,224,7085	175	2,285	3,428	4,928	5,142
2020	11,905	727,128,056	175	2,340	3,510	5,010	5,264
2021	12,188	744,433,703	175	2,395	3,593	5,093	5,390
2022	12,479	762,151,225	175	2,452	3,679	5,179	5,518
2023	12,776	780,290,425	175	2,511	3,766	5,266	5,649
2024	13,080	798,861,337	175	2,571	3,856	5,356	5,784
2025	13,391	817,874,237	175	2,632	3,948	5,448	5,921
2026	13,710	837,339,643	175	2,694	4,041	5,541	6,062
2027	14,036	857,268,327	175	2,758	4,138	5,638	6,206
2028	14,370	877,671,313	175	2,824	4,236	5,736	6,354
2029	14,712	898,559,890	175	2,891	4,337	5,837	6,505
2030	15,062	919,945,616	175	2,960	4,440	5,940	6,660

1. Population projections are based on an annual growth rate of 2.38%, which is the average of the high and low growth rates from the General Plan.
2. 2017 population from Department of Finance (serves as baseline for projections).
3. 175 gpcd is based on the Average Water Production per Capita calculated in Table 4-4 .
4. Actual water produced in 2017 and 2018.
5. Projected Water Demand for 2019 is based on the average of the last 10 years of water production (serves as baseline for projections).

Figure 4-1 provides a visual of both the historic and projected water production and population for the years from 2000 to 2030.

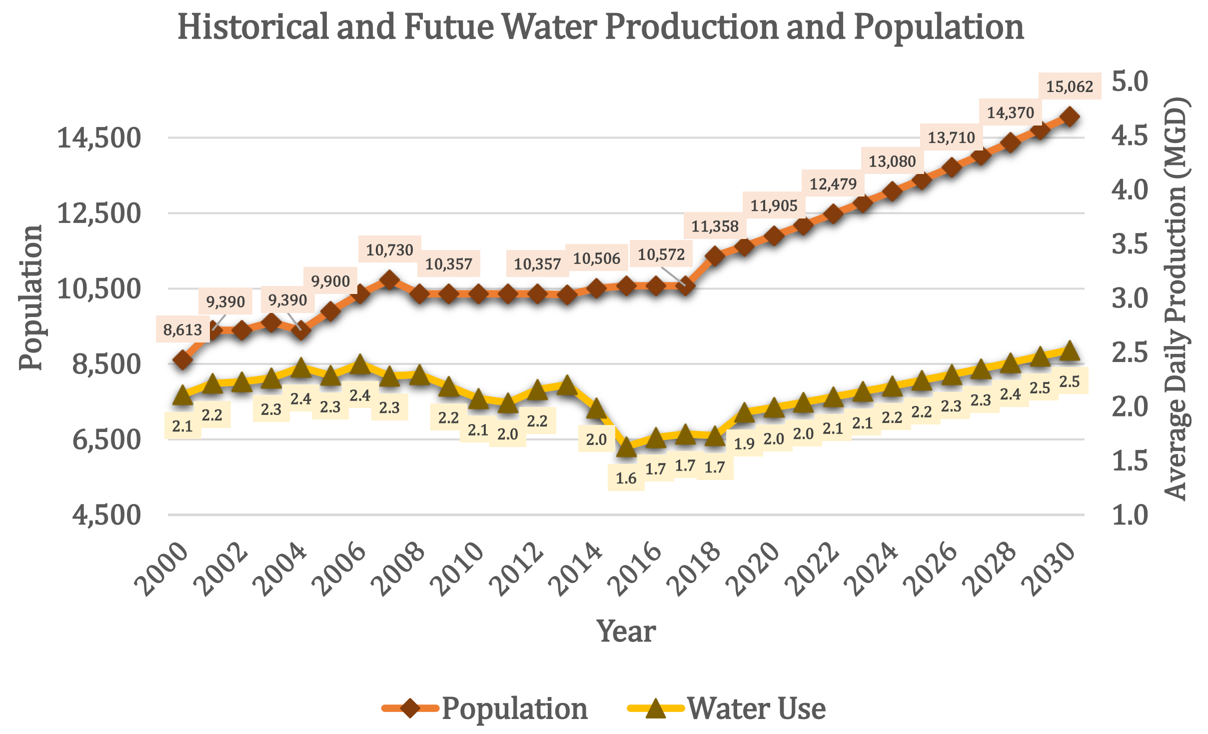


Figure 4-1
Historical and Future Water Production

4.5 - Existing Deficits and Storage Requirements

The CWS require a public water system be able to meet MDD with sources only (no storage) and with the largest source offline. As shown in Table 4-2, if Well E13W is offline, only 2,193 gpm is available. Comparing this to the existing MDD of 3,274 gpm, shown in Table 4-3, the system is approximately 1,100 gpm short of meeting this requirement. This deficit can be made up with one or multiple new wells with a cumulative capacity of at least 1,100 gpm.

The CWS state that the City may use all of its sources plus its storage facilities for the following conditions:

- Operational (Capacity required to meet the Peak Hour Flow);
- Emergency (Power outage within the City); and
- Fire (Maximum Day plus a Fire Event).

4.5.1 - Operational

The operational capacity is needed to provide water for fluctuation in demand such as maximum day and peak hour flows. Peak hour flow is higher than the maximum day flow

plus fire flow, so this amount is used to analyze the operational function of the distribution system.

Based on the existing PHD of 4,912 gpm, the City's current capacity of 3,325 gpm with all wells running generates a deficit of 1,587 gpm. Over a four-hour period, this requires a storage volume of approximately 380,880 gallons, which is greater than the City's existing storage volume of 100,000 gallons.

Assuming the new well(s) mentioned above are installed, the new capacity will increase by 1,100 gpm to 4,425 gpm. This deficit of 487 gpm will require a storage volume of 116,880 gallons which is much closer to the existing storage volume.

4.5.2 - EMERGENCY

The water supply system should be capable of providing, at a minimum, the ADD through emergency power. Emergency power could be in the form of dual power, direct engine driven pumps, or engine-generator sets. The City's existing water system has two propane-powered engine driven pumps at Wells E10W and E11W and two diesel powered engine driven pumps at Wells E9W and E13W. With the standby power at each of these wells, a total flow of 2,322 gpm can be supplied by auxiliary power. This is greater than the existing ADD, so no additional auxiliary power is required. If Well E10W continues to be inactive, the City may consider moving the back-up power source from Well E10W to another compatible well.

4.5.3 - FIRE

As shown in Table 4-7, the **existing wells** require a storage of over 500,000 gallons to meet Peak Hour Demand and Fire Flow volumes. As mentioned above, the City is currently operating at a deficit of approximately 1,100 gpm under MDD scenario. Assuming the new well or wells are installed, the total storage needed to accommodate the Peak Hour Demand and fire flow volumes is approximately 157,560 gallons. This is still greater than the existing 100,000 gallons of storage currently in place, so additional storage should be considered soon, and it should reflect the volumes needed for expansion. See Section 4.6 for ultimate tank volume recommended for build-out.

Tulare County Fire Department serves the City of Exeter for fire protection. As mentioned above, the County requires a fire flow of 1,500 gpm for any commercial, industrial, or residential home over 3,600 square feet. The existing Maximum Day Demand plus Fire Flow (MDD + FF) with **all existing and proposed wells running**, would still have a deficit of approximately 339 gpm, which over a two-hour period would require 40,680 gallons of storage.

All existing capacities, demands, and required storage volumes are summarized in Table 4-7.

Table 4-7
Existing Capacities, Demands, and Storage Volumes for Year 2030

Demand Scenario	Existing Capacity (gpm)	Existing Demand (gpm)[2]	Deficit (gpm)	Storage Volume Needed (gallons)	Deficit with New Wells Installed (gpm)[3]	Storage Volume Needed with New Well Installed (gallons)
MDD	2,193[1]	3,274	1,081	NA	0	NA
MDD + FF	3,325	4,774	1,449	173,880	339	40,680
PHD	3,325	4,912	1,587	380,880	487	116,880
		Total Storage Needed		**554,760**		**157,560**

1. Existing capacity (3,325 gpm) with largest source (1,132 gpm) offline.
2. From Table 4-3.
3. Assumes new well or wells installed with a cumulative capacity of 1,100 gpm.

4.6 - Future Deficits and Storage Requirements

For future conditions, the MDD in 2030 is projected to be approximately 4,440 gpm. This would require multiple new wells with a cumulative additional capacity of 2,250 gpm between now and year 2030. This will bring the projected total capacity to 5,575 gpm (4,445 gpm with the largest well offline).

4.6.1 - Operational

Based on the projected PHD of 6,660 gpm, and assuming the City installs two new wells, adding a cumulative capacity of 2,250 gpm by year 2030, the PHD deficit will be 1,085 gpm, over a four-hour period. This will require approximately 260,400 gallons of storage.

4.6.2 - Emergency

The City's existing Wells E9W, E10W, E11W, and E13W have standby power. The total production from these wells is currently 2,322 gpm. The projected ADD is 2,960 gpm, so an additional capacity of 638 gpm from one or more wells will need to have a back-up power source by year 2030. If Well E10W continues to be inactive, the City may consider moving the back-up power source from Well E10W to another compatible well.

4.6.3 - Fire

The projected Maximum Day Demand plus Fire Flow with all existing and proposed wells running, would still have a deficit of approximately 365 gpm, which over a two-hour period would require 43,800 gallons of storage.

The projected Peak Hour Demand with all existing and proposed wells running, would still have a deficit of approximately 1,085 gpm, which over a four-hour period would require

260,400 gallons of storage. All projected capacities, demands, and required storage volumes are summarized in Table 4-8.

Table 4-8
Projected Capacities, Demands, and Storage Volumes for Year 2030

Demand Scenario	Projected Capacity (gpm)	Projected Demand (gpm)[3]	Deficit (gpm)	Storage Volume Needed (gallons)
MDD	4,445[1]	4,440	NA	NA
MDD + FF	5,575[2]	5,940	365	43,800
PHD	5,575[2]	6,660	1,085	260,400
			Total Storage Needed	**304,200**

1. Existing capacity (3,325 gpm) plus new wells (2,250 gpm) with largest source (1,132 gpm) offline.
2. Existing capacity (3,325 gpm) plus new wells (2,250 gpm).
3. From Table 4-5 for build-out of City limits in year 2030.

As shown in Table 4-8, the total storage needed to accommodate the projected Peak Hour Demand and Fire Flow volumes is approximately 304,200 gallons. It is recommended that a 500,000-gallon (0.5 MG) tank be installed to allow the City to not only meet these storage requirements but to allow flexibility in hours of pumping. Wells can pump during off-peak hours to fill the tank, which can then be pumped out during the day. It would also allow for emergency storage in the event of a well being taken offline for maintenance or due to malfunction or contamination. The City will need to consider if this recommended storage volume will be met with one large tank or multiple smaller tanks.

SECTION 5 - TOOLEVILLE

5.1 - Existing Water System Facilities

Tooleville is a small rural community located on the east side of Spruce Road, roughly three quarters of a mile east of the City of Exeter in Tulare County. See Figure 2-1, Study Area. The Tooleville water system is operated by the Tooleville Mutual Nonprofit Water Association (TMNWA), Inc. and prior to 2005, included three wells and approximately 3,000 linear feet of 6" asbestos cement water main. Tooleville includes 66 occupied residences, six vacant residences, and a lawn mower repair shop. The residences are not equipped with water meters and usage per residence is not measurable. See Figure 5-1 for Tooleville land use designations taken from the Tooleville Legacy Plan (2017).

In 2009, the water mains were replaced using 8" PVC pipe and currently, only two wells are in operation, located in the East Alley, just north of Morgan Avenue (Morgan Well), and at the end of the access road north of Alfred Avenue (Alfred Well). There is a hydropnuematic tank at both well sites. The two wells only provide non-potable water to the residents of Tooleville due to a history of high nitrates and more recently, the detection of hexavalent chromium. The wells have also had a positive result for bacteria in the past but have since been chlorinated and flushed and are clear of bacteria. The source of bacteria is unknown and is assumed to be naturally occurring according to the consumer confidence reports. Previous studies have also shown the recorded water pressure to be below 20 psi and even below 10 psi which has created backflow into the system. See Appendix F for the two most recent Consumer Confidence Reports (2016 and 2017) produced for Tooleville.

5.2 - Existing Water Demand Criteria

The only historic well production data available for Tooleville is from year 2016 (See Table 5-1), which indicates 15,893,479 gallons of water pumped for the year and a maximum monthly water pumped in June, in the amount of 2,453,988 gallons (81,800 gallons per day).

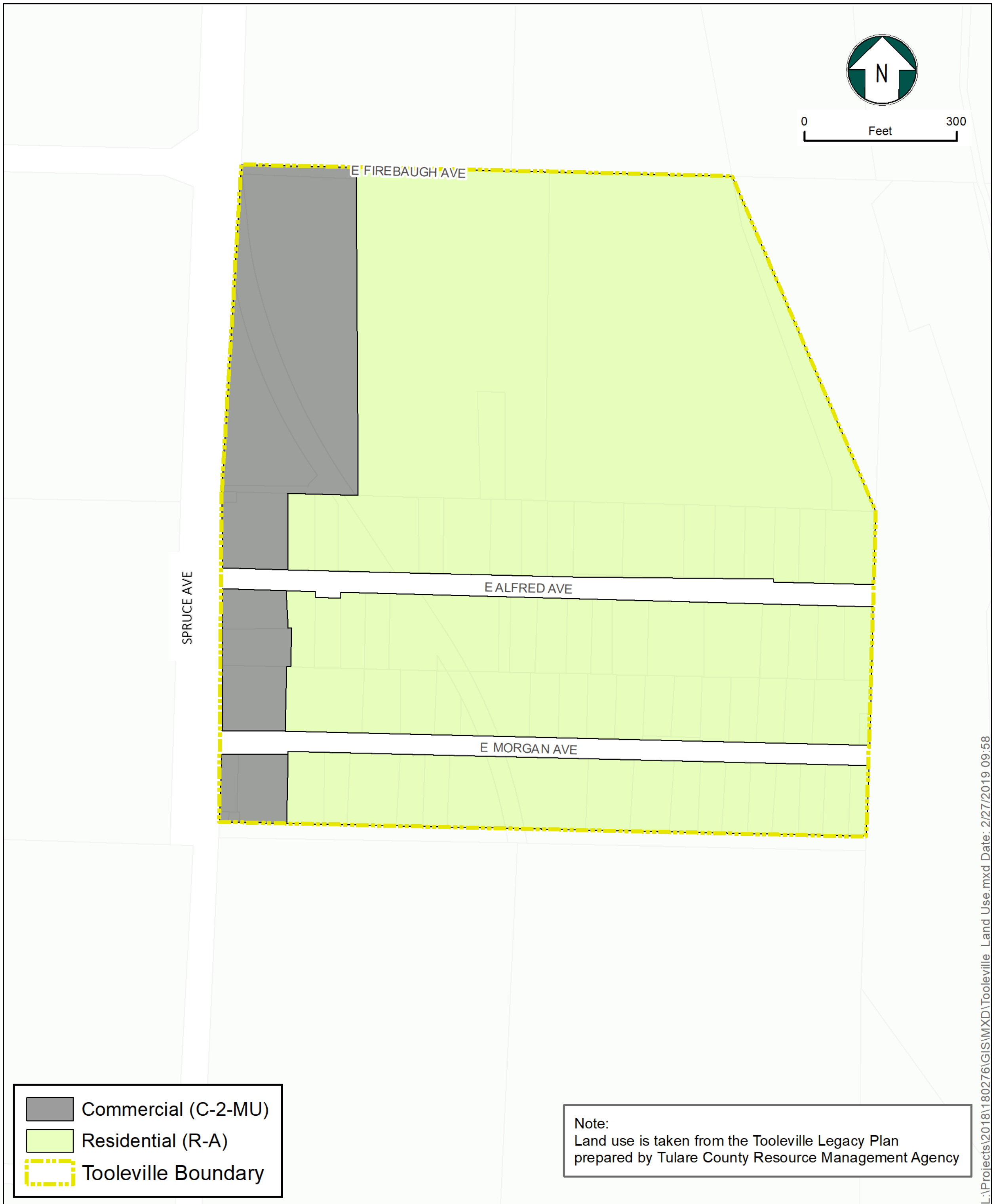


Figure 5-1
Tooleville Land Use Designations

Table 5-1
Total Water Pumped in Year 2016 (gallons)

Month	2016
January	1,316,010
February	0
March	232,797
April	1,400,333
May	1,243,787
June	2,453,988
July	1,937,963
August	1,739,509
September	1,636,281
October	2,144,904
November	914,231
December	873,676
Total (gallons)	**15,893,479**

Due to the water quality issues mentioned above, the residents have been supplied with bottled water for potable use. Table 5-2 provides a summary of bottled water usage since 2014.

Table 5-2
Total Bottled Water Consumption by Tooleville (gallons)

Month	2014	2015	2016	2017	2018
January	–	2,220	3,270	2,160	0
February	–	1,110	2,190	2,280	0
March	–	1,050	2,190	2,010	1,360
April	–	1,140	1,650	223	2,435
May	–	3,240	2,190	2,250	2,395
June	2,370	2,160	2,220	2,130	2,040
July	2,442	2,280	2,190	No Data	2425
August	2,490	2,150	2,190	No Data	2,255
September	2,622	2,220	220	No Data	2,615
October	2,160	2,250	4,110	No Data	2,425
November	2,220	2,220	1,830	No Data	2,278
December	2,070	2,244	2,190	No Data	2,349
Total (gallons)	**16,374**	**24,284**	**26,440**	**11,053**	**22,577**

Combining the pumped water and consumed bottled water for June 2016, a total water usage of 2,456,208 gallons (81,872 gallons per day (gpd)) is calculated as the maximum monthly usage. These numbers serve as the basis of the water demand calculations summarized in Table 5-3.

Table 5-3
Existing Water Demand Scenarios

Maximum Monthly Usage (gpd) [1]	Adjusted Water Usage (gpd) [2]	Population [3]	Average Day Demand Per Capita (gpcd)	Average Day Demand (gpm)	Maximum Day Demand (gpm) [4]	Max-Day Plus Fire Flow (gpm) [5]	Peak Hour Demand (gpm) [6]
81,872	127,720	454	281	89	223	1,723	558

1. Maximum monthly usage was found to be in June of 2016 (only a single year of data provided).
2. Since only 1 year of data was provided, the maximum monthly water usage for Tooleville was adjusted by multiplying it by a peaking factor. The peaking factor was determined by taking the maximum monthly usage for the City of Exeter over a 10-year range (July 2012) and dividing by Exeter's maximum monthly usage in June 2016. The calculated peaking factor was 1.56.
3. Population data for 2018 determined by using straight line extrapolation method from 2010 US Census data and the TMNWA Preliminary Engineering Report, dated April 2005.
4. The peaking factor for MDD is 2.5 times ADD. This is higher than for Exeter due to a smaller community which is more prone to higher peaks than a larger community.
5. The County of Tulare refers to the California Fire Code Appendix B for Fire Flow requirements. 1,500 gpm will be used for Tooleville as there exists a commercial building and there is potential for other commercial buildings in the future.
6. The peaking factor for PHD is 2.5 times MDD. This is higher than for Exeter due to a smaller community which is more prone to higher peaks than a larger community.

5.3 - Future Water Demand Criteria

The Tooleville area consists of 38.7 acres. The existing land use is mixed with residential land use, agricultural/open land use, and one commercial plot east of Spruce Road. The designated zoning for Tooleville would allow for a total of 28.2 acres for residential land use and 5.4 acres for commercial land use east of Spruce Road. This potential development would impact the future water demand in Tooleville. Since actual development is harder to predict for Tooleville, and a build-out date is not established, potential development was estimated based on what land is developed vs. undeveloped. For this WSMP, it is assumed that complete build-out of Tooleville will result in an overall 30% increase in population and water usage compared to today. This would account for infill of any undeveloped or underdeveloped areas currently within the Tooleville boundary. This increase in water usage yields the following water demands, summarized in Table 5-4.

Table 5-4
Future Water Demand Scenarios

Population [1]	Average Day Demand Per Capita (gpcd)	Average Day Demand (gpm)	Maximum Day Demand (gpm) [2]	Max-Day Plus Fire Flow (gpm) [3]	Peak Hour Demand (gpm) [4]
590	281	115	288	1,788	720

1. Population based on today's population plus assumed 30% increase to build-out.
2. The peaking factor for MDD is 2.5 times ADD. This is higher than for Exeter due to a smaller community which is more prone to higher peaks than a larger community.
3. The County of Tulare refers to the California Fire Code Appendix B for Fire Flow requirements. 1,500 gpm will be used for Tooleville as there exists a commercial building and there is potential for other commercial buildings in the future.
4. The peaking factor for PHD is 2.5 times MDD. This is higher than for Exeter due to a smaller community which is more prone to higher peaks than a larger community.

5.4 - Connection to Exeter

Due to the water quality and quantity issues experienced in Tooleville, the United States Department of Agriculture (USDA) provided funding to the Tooleville Mutual Nonprofit Water Association to complete a Preliminary Engineering Report that would review water source problems and potential solutions. The report was completed in 2005 by Provost & Prichard and it provided five alternatives for addressing the water quality issues. The alternatives were as follows:

1. Drill new replacement wells, increase water storage, and perform pipeline improvements;
2. Treat existing or new wells;
3. Construct surface water treatment plant and draw water from Friant-Kern Canal;
4. Connect to City of Exeter water supply; and
5. Drill replacement wells utilizing a water storage tank for blending of nitrate concentrations to acceptable levels.

The Provost and Pritchard report concluded that alternative 1 be selected due to cost and complexities of arranging for a surface water agreement and subsequent treatment plant. It did, however, suggest connection to Exeter as the best long-term solution, since the pipeline installation is feasible and the water quality in Tooleville is unreliable. The report did not include any analysis of how the connection to Exeter would impact the existing City water system, nor did it suggest improvements to mitigate any impact. For these reasons, this section of the WSMP will provide insight to how the existing water system in Exeter is impacted and what would need to be done to accommodate the connection to Tooleville both now and in the future.

5.5 - Effects of Connection to Exeter Water System

For the purpose of evaluation, the proposed connection point was determined to be near the southeast corner of the City at the intersection of 3rd Street and East Firebaugh Avenue. The new water main would extend approximately 3,900 linear feet east on Firebaugh Avenue and then south on 14th Avenue. See Figure 5-2 for the proposed water connection from Exeter to Tooleville.

The proposed connection was evaluated using Bently WaterCAD, a water system modeling program that allows manipulation of various controls, and that provides results of pressure, flow velocities, pipe head loss, and more. See Chapter 6 for further information.

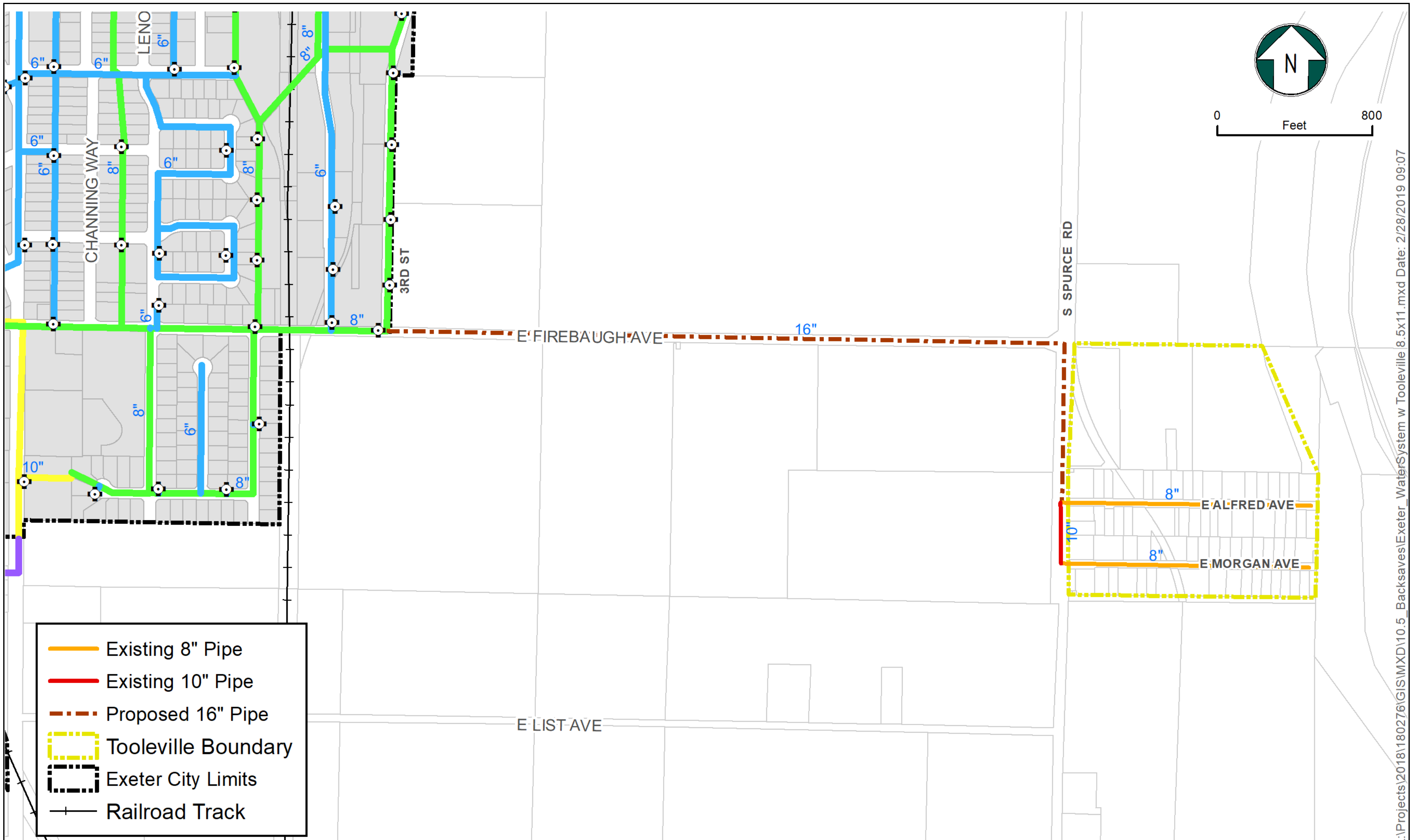


Figure 5-2
Water Connection from Exeter to Tooleville

All demand scenarios were simulated in the model to determine the optimal pipe size for the connecting main in order to minimize high velocities and pressure loss. The recommended diameter was determined to be 16". With this in place, the results show no appreciable change in pressure at the point of connection or any of the surrounding pipelines in the system for Maximum Day Demand or Peak Hour Demand. However, the Maximum Day plus Fire Flow condition did cause significantly high velocities in some of the pipes near the connection point and the pressure dropped approximately 8-10 pounds per square inch (psi). The resulting pressure at the simulated fire was 18 psi, which is slightly less than the minimum 20 psi required by the California Fire Code during fire flow conditions. The same model was run for future demands and similar results were obtained.

Assuming a new storage tank and booster station are installed, the overall pressure drop will be detected by the booster station which will increase throughput to maintain a minimum set pressure. These settings can be adjusted to ensure the minimum pressure in Tooleville is met during a fire flow scenario. It should also be mentioned that the existing wells in Tooleville could be kept online for emergency fire flow conditions only. The two systems would be separated by a backflow device and the on/off pressure settings of the wells could be set to 20 psi which would ensure they only operate if the pressure were to drop to that level. Once Tooleville is connected, the only situations that should cause that significant of a pressure loss would be an open hydrant or a main pipe break.

Although the connection of Tooleville doesn't require any upgrades to the existing distribution system, it must be noted that Tooleville's demand adds to Exeter's already sizable deficit between source and storage capacity and existing demands. Chapter 4 establishes the needed source and storage improvements in order to meet existing and future demands within Exeter. If Tooleville's water demand were to be taken on by Exeter, the proposed well capacity would need to be increased by 223 gpm now and 288 gpm in the future to account for this additional demand. Also, the storage needed to provide for PHD for a four-hour period would need to be increased by approximately 103,680 gallons to cover the future deficit. This need would be met if the 0.5 MG tank is constructed, as recommended in Chapter 4, and costs for such should be shared by Tooleville.

5.6 - Other Considerations

The following are other operational conditions that the City will need to consider if the two systems were to merge:

- The existing wells in Tooleville have historically been the source of high nitrates and hexavalent chromium. It would be recommended to either abandon the existing wells or keep them as stand-by wells to supplement only during an emergency or fire flow scenario; and
- The source of bacteriological contamination in Tooleville is unknown. Further investigation may be needed to determine the source so additional action can be taken to sterilize or mitigate the potential for cross-contamination. The City may want to consider a backflow preventer along the connection main or at the determined contamination source to prevent passing bacteria from Tooleville to Exeter.

5.7 - Cost of Improvements

Table 5-5 provides a cost estimate for the pipeline improvements needed to connect Tooleville to the City of Exeter's water system. Discussions of the cost breakdown and contingency can be found in Section 10.3: Construction Costs.

Table 5-5
Cost Estimate for Tooleville Pipeline Improvements

Infrastructure Costs							
New Size/ Diameter (Inches)	Length (Feet)	Unit Cost ($/Unit)	Capital Improvement Cost	Construction Management Cost	Soft Costs (Engineering, Survey, Administration, Environmental, and Legal Fees)	Contingency	Project Total
16	4,642	$155	$719,510	$107,927	$179,878	$151,097	$1,158,411

SECTION 6 - HYDRAULIC MODEL DEVELOPMENT

6.1 - Overview

The software used to analyze the City of Exeter water system is WaterCAD by Bentley Systems. WaterCAD is a modeling tool that helps engineers design and analyze complex pressurized piping systems. WaterCAD has a powerful Computer Aided Drafting (CAD)-like interface that helps to quickly and easily layout a complex network of pipes, reservoirs, tanks, and pumping facilities. These elements can be individually or collectively edited using built-in data tables. Also, WaterCAD enables the engineer to create and compare multiple scenarios for the water system. For example, in a typical water system study, it is useful to determine system pressures under average loading conditions, peak loading conditions, or under fire flow conditions. If new development is to occur, WaterCAD can be used to determine the impact of the new development on the water system.

6.2 - Assumptions

The following are several assumptions that needed to be made to set up the hydraulic model for the City. Many of the assumptions are based on City standards.

- Pipe sizes and materials, and respective friction coefficients are based on the City water system maps and the best-known data.
- All future water mains will have a minimum diameter of 8".
- All future water mains are assumed to be C900 PVC and use the respective friction coefficient.
- Latest well results were provided by the City for Wells E6W, E11W, and E13W. These tests show three different flow rates, running the pump at higher frequency to lower frequency. These results are used in the hydraulic model as 3-point pump curves for Well E6W, Well E11W, and Well E13W. The remaining wells have one-point pump curves.
- Future water demand projections are distributed throughout the model using the land uses in the General Plan (see Figure 2-3). Table 6-1 provides a summary of the land uses, and the unit demands associated with each. Existing demands were distributed in the developed areas and the future demands were distributed throughout the underutilized and vacant areas (see Figure 2-4).
- Future development of the Exeter Sphere of Influence changes the total area to approximately 1,839.23 acres (reflected in Table 6-1).
- The model uses General Plan land use designations instead of existing land use when water demand of the planned land use is higher than the existing land use.
- The model uses existing land use to estimate water demands where sites have already been developed.
- The model uses General Plan land use designations for sites that are not developed.
- Past water usage is based on available recorded data over the last five years instead of 10 years as recommended by the California Waterworks Standards.

Table 6-1
Land Use Acreages and Loading Rates

	Developed Acres	Water Coefficient (gpm/acre)	Total Water Demand (gpd)
Developed Acres by Existing Land Use - 2018			
Residential	599.58	2,000	1,199,160
Residential (High)	12.33	3,300	40,689
Commercial	50.66	2,500	126,650
Industrial	105.93	2,500	264,825
Public	144.04	1,000	144,040
SUBTOTAL	**912.54**		**1,775,364**
Underutilized Acres by General Plan Designation			
Very Low Density	11.25	1,800	20,250
Low Density Residential	18.18	2,200	39,996
Medium Density Residential	19.82	2,800	55,496
High Density Residential	0.34	3,300	1,122
Central Commercial	5.02	2,750	13,805
General Commercial	11.34	2,750	31,185
Service Commercial	6.23	2,750	17,133
Professional Office	0.6	2,750	1,650
Industrial	10.75	2,750	29,563
Planned Industrial	2.14	2,100	4,494
Open Space	0.29	0	0
Urban Reserve	43.17	2,200	94,974
SUBTOTAL	**129.13**		**309,667**
Vacant Acres by General Plan Designation			
Very Low Density	5.28	1,800	9,504
Low Density Residential	61.66	2,200	135,652
Medium Density Residential	172.13	2,800	481,964
High Density Residential	9.64	3,300	31,812
Central Commercial	0.21	2,750	578
General Commercial	6.44	2,750	17,710
Service Commercial	4.7	2,750	12,925
Industrial	55.55	2,750	152,763
Planned Industrial	77.74	2,100	163,254
Public Facilities	33.41	3,000	100,230
Open Space	19.93	0	0
Urban Reserve	350.87	3,000	1,052,610
SUBTOTAL	**797.56**		**2,159,001**
TOTAL	**1839.23**		**4,244,032**

6.3 - Data Collection and Validation

The model is based on an existing model for the City that was updated for this WSMP, based on recent meetings and comments from the City. Updates include changes to distribution piping, wells being online or offline, updated pump curves based on recent pump tests, and updated demands based on historical data. Pressure readings were also taken at several locations throughout the City, which would then be compared to model results for verification and calibration. System pressure readings can be found in Appendix G.

6.4 - Elements of the Hydraulic Model

The hydraulic model is composed primarily of pipes and nodes. Wells are simulated using a reservoir set at the static water level and a pump programed with the assumed pump curve, generated from recent pump tests. The demands are distributed based on development and respective land use and are applied at each of the nodes. The pipe diameters and materials are entered using the pipe data from the water system map. The elevated tank is also simulated in the system by setting the elevations and on/off controls for the wells that were provided by the City.

The various demand scenarios are based on a base scenario of the ADD which is then globally scaled by a peaking factor to obtain MDD and PHD. These peaking factors are further discussed in Chapter 4.

The future demand scenarios are based on future build out areas and land uses discussed earlier and the same peaking factors to create the MDD and PHD scenarios.

6.5 - Pump Curves

Pump curves are important in the computer model to allow the simulation of the actual pump performance conditions and properly calibrate the model. A pump performance curve can contain a single-point or a three-point curve. A single-point curve is less accurate as it is based on a single point of pump performance data (pump head and flow at a single design point). A three-point design curve is more accurate since it provides three points of data: the shutoff head, the design point, and the maximum operating point. A three-point curve provides more accuracy when analyzing a water system as it better simulates actual performance of a well pump based on different pressure conditions. The model uses single-point curves for Wells E9W, E12W, and E14W and three-point curves for Wells E6W, E11W, and E13W. The results from the Southern California Edison (SCE) hydraulic tests are included in Appendix B.

SECTION 7 - DISTRIBUTION SYSTEM ANALYSIS

7.1 - Existing Model Results

Based on the available water usage data and demand scenarios formulated in the previous chapters, the hydraulic model was used to simulate various demand scenarios. See Appendix H for example results of the water model for future MDD. Using the model and basic numerical comparisons, several deficiencies were identified in the existing system. Some of the deficiencies should be addressed as soon as possible while others can be incorporated into the City Capital Improvements Program (See Chapter 10).

- Existing System Well Capacity – The existing system does not have adequate ground water source capacity to supply the current calculated MDD. It is recommended that one or more wells be constructed as soon as possible with a cumulative capacity of 1,100 gpm. Another option would be to evaluate existing wells and their production loss to determine if production can be increased. Based on the results of this evaluation and any improvements made, the capacity needed from any new wells will need to be recalculated.
- Existing Water Pressure – Typical distribution systems maintain a minimum of 40 psi during MDD conditions. Residential areas with main pipes of 6" or less had pressures as low as 36 psi during current MDD model simulation. Most low-pressure readings from the model occurred in the northeast section of the City, north of Firebaugh Avenue and east of State Route 65.
- Existing System Storage – The existing system currently uses an elevated water tank to supply additional capacity and to help balance pressures in the system. The tank capacity is not sufficient on its own to supply existing Peak Hour Demand and Fire Flow requirements. Also, as the tank level drops, the ability to supply additional pressure to the system is reduced. Additional storage is needed.

7.2 - Future Model Results

Similar to the existing system, the future system was simulated under various demand scenarios. Several of the identified deficiencies are related to what was found for the existing system, such as the need for additional source capacity and storage. However, many of the future deficiencies relate to undersized pipes or the need for new pipes to serve future development. The following is a summary of the identified deficiencies related to the future built-out system.

- Future System Well Capacity – The future system does not have adequate capacity to supply the projected MDD. It is recommended that one or more wells be constructed by year 2030 with a cumulative capacity of 2,250 gpm. Depending on the condition of the existing wells between now and year 2030, this number will likely need to be verified. As mentioned above, there may be potential for increasing production from existing wells. Based on any improvements made, the capacity needed from any new wells will need to be recalculated.

- Future Water Pressure – The model shows by year 2030, the following areas would benefit from additional pipelines or loops:

  1. Construct 12" Water Line – Construct a 12" water line along State Route 65 from Sequoia Drive to Atkinson Way. This will help create a loop in the system to stabilize pressures within the system. While only a 12" is needed, it may be prudent to install a 16" or 18" diameter pipe to be conservative and to allow for expansion beyond the general plan area, if needed beyond 2030.
  2. Construct 12" Water Line – Replace the existing 8" and 10" water lines along State Route 65 from Sequoia Drive to Firebaugh Avenue with a 12" line. This improvement will help create a loop in the system to stabilize pressures within the system;
  3. Construct 12" Water Line – Replace the existing 10" main along Firebaugh Avenue from State Route 65 to Industrial Drive with a 12" water line. This improvement will help create a loop in the system to stabilize pressures within the system;
  4. Construct 12" Water Line – Construct a 12" water line along Firebaugh Avenue from Filbert Road to Belmont Road. This improvement will help create a loop in the system to stabilize pressures within the system; and
  5. Construct 10" Water Line – Construct a 10" water line along Glaze Avenue from Industrial Drive to Filbert Road. This improvement will help create a loop in the system to stabilize pressures and help facilitate growth in the industrial area.
- Future System Storage – The condition of the existing elevated tank is hard to predict for the year 2030. As it stands, there is a projected shortage of source water, which will require more storage than the existing tank can provide. In the year 2030, if production capacity is increased by 2,250 gpm through new wells or rehabbing existing wells, 304,200 gpm of storage will still be needed. It is recommended that the City construct a tank or multiple tanks with a cumulative volume of 500,000 gallons (0.5 MG). Ideally, the tank/s will be constructed in the near future to remedy the existing shortage, allow expansion of the City, and provide piece of mind during an emergency.

SECTION 8 - WATER QUALITY

8.1 - Existing Water Quality Regulations

The quality of the drinking water must meet mandatory drinking water standards. In 1974, the Safe Drinking Water Act (SDWA) gave the United States Environmental Protection Agency (EPA) the authorization to set drinking water standards for contaminants in the drinking water supplies. On July 1, 2014, primary enforcement authority (primacy) to enforce Federal and State Safe Drinking Water Acts, transitioned from the California Department of Public Health (CDPH) Drinking Water Program to the State Water Resource Control Board (SWRCB), Division of Drinking Water (DDW). Under the provisions of the SDWA, the SWRCB has the primary enforcement responsibility.

Typical monitoring regulations include the Arsenic Rule (originally enacted in 2001), Groundwater Rule (enacted in 2004), Fluoride Rule (enacted in 1986), Lead and Copper Rule (enacted in 1991), Total Coliform Rule (enacted in 1989), Phase II Rule-organics (enacted in 1991), Phase V Rule-organics (enacted in 1992), Public Health Security and Bioterrorism Prevention and Response Act (enacted in 2002) and the Radon Rule (enacted in 2004). Appendix I includes a summary of the current (2018) Maximum Contaminant Levels (MCL) and regulatory dates enforced by DDW.

8.2 - Existing Water Quality

Source water assessments of the drinking water for the City of Exeter have been completed on the following wells: E6W, E9W, and E11W in September 2001, E12W in June 2004, E13W in August 2007, and E14W in February 2010 in compliance with local and State regulations. Typical monitoring and testing are ongoing. It was found that the City's groundwater sources are considered most vulnerable to contaminants from fertilizer, pesticide, and herbicide applications. In addition, the sources are considered most vulnerable to contaminants from nearby septic systems, agricultural and irrigation wells, injection wells, dry wells, sumps, metal plating/finishing/fabricating, and automobile gas stations. The City of Exeter and Tulare County, who oversee these operations, have regulations in place to help mitigate any affect these activities have on existing and new sources of drinking water.

Water samples collected between January 14, 2016 and March 23, 2016 are used to provide a snapshot of Exeter's water quality. Six wells, E6W, E9W, E11W, E12W, E13W, and E14W were sampled. The general water quality is good with power of hydrogen (pH) values from 7.1 to 8.4 and specific conductance values ranging from 500 to 790. The sample from E12W is classified as moderately hard, all the other samples were in the hard or very hard classifications. Heavy metals were detected occasionally, i.e. iron in E9W, E12W, and E14W; and barium in E6W, E9W, E11W, and E13W (iron in E14W exceeded the secondary MCL of 300 micograms per liter (μg/L)). Arsenic was detected in Wells E12W and E14W. The arsenic concentrations, 2.9 parts per billion (ppb) in E12W and 2.6 ppb in E14W, are well below the new arsenic standard of 10 ppb.

In 1994, levels of Dibromochloropropane (DBCP), a pesticide used in the past to combat nematodes in agriculture, began showing up in concentrations exceeding the MCL in Well E10W. The concentrations improved and was returned to service. In 2000, concentrations of DBCP in Well E9W exceeded the MCL. In August 2001, the levels dropped back below the MCL. Then, in 2003, Well E6W showed concentrations of DBCP exceeding the MCL and then improved. As of the most recent round of testing in February 2019, all active wells are below the 0.2 μg/L MCL for DBCP. See Table 8-1 below.

Table 8-1
DBCP (μg/L) Test Results in Active Wells - February 2019

Well 6	Well 9	Well 11	Well 12	Well 13	Well 14
0.063	0.054	0.010	Non-Detect	Non-Detect	Non-Detect

Beginning in 2016, Well E6W began showing contamination of total coliform. In addition, some samples came back positive for Escherichia coli (E. coli) and fecal coliform. Well E6W has been sterilized and is clear of any bacteria. Other wells that tested positive for total coliform were E9W, E11W, and E14W. Repeat samples from these three wells did not show further contamination.

The City of Exeter Annual Water Quality Report for 2017 is attached in Appendix J. Additional information can be found in the Water Permit No. 03-12-05P-005, written by the Department of Health Services in 2005. A copy of this report is on file with the City of Exeter Department of Public Works.

Some recently enacted rules pertaining to water quality include the following:

8.2.1 - Arsenic Rules

Arsenic is a constituent of many foods such as meat, fish, poultry, grain, and cereals. Excessive amounts of arsenic can cause acute gastrointestinal damage and cardiac damage. Starting January 23, 2006, the arsenic Federal MCL was set at 10 ppb. The City has recently tested the arsenic levels and is below the new Federal mandated level.

8.2.2 - Stage 1 Disinfection/Disinfection By-products Rule (D/DBPR)

Because the City's population surpassed 10,000 persons, Stage 1 Disinfection/Disinfection By-products Rule (D/DBPR) has become effective for the City of Exeter. This rule was enacted in 1998 and became effective in January 2002. Stage 1 limits are as follows:

Total Trihalomethanes (TTHMs)	- 80 ug/L
Haloacetic Acids (HAAs)	- 60 ug/L
Bromate	- 10 ug/L
Chlorite	- 1.0 milligrams per liter (mg/L)

The following residual disinfectant levels have been established to limit the applied dose of chlorine, chloramines, and chlorine dioxide during drinking water treatment:

Chlorine	- 4.0 mg/L
Chloramines	- 4.0 mg/L
Chlorine Dioxide	- 0.8 mg/L

The City has recently tested these levels and is below the Federal mandated level.

8.2.3 - Stage 2 Disinfection/Disinfection By-products Rule (D/DBPR)

Stage 2 D/DBPR is in draft form at a Federal level. Stage 2 will consist of monitoring chloroform at 0.070 mg/L, require public water systems to conduct a yearlong initial distribution system evaluation to identify monitoring sites with peak DBP levels, require public water systems to comply with 80/60 TTHM/HAA standards at each well site and raise the TTHM/HAA limits to 120/100 temporarily to allow time for utilities to make adjustments to come into compliance with the 80/60 TTHM/HAA standards.

To reduce water quality problems, future well locations should be undertaken in general accord with the following procedures:

- Employ a qualified hydrogeologist to tentatively locate a site; and
- Drill a test well, under the direction of the hydrogeologist, to evaluate well potential for production and to, through sampling and testing, predict water quality and quantity from penetrated aquifers.

8.2.4 - Lead and Copper Rule (LCR)

The objective of the Lead and Copper Rule (LCR) is to minimize the corrosion of lead and copper containing plumbing materials in public water systems by requiring utilities to optimize treatment for corrosion control. The LCR establishes action levels in lieu of MCLs for regulating the levels for both lead and copper in drinking water. The action level for lead was established at 0.015 mg/L and for copper at 1.3 mg/L. An action level is exceeded when greater than 10% of the samples collected from the sampling pool contain lead levels above 0.015 mg/L or copper levels above 1.3 mg/L. Once the action levels have been exceeded, action is required by the governing agency of the public water system to reduce lead and copper corrosion. The City of Exeter's lead and copper levels were below the action level for 2017.

8.3 - Future Groundwater Wells

Limitations with respect to the development of additional water supply from the underground aquifers in the immediate area of Exeter include those associated with both quality and quantity. DBCP contamination is of concern throughout the community. This contamination concern lessens towards the southerly and westerly portion of the City. Thus, the City is looking to depend upon the southern and western sectors to provide its long-term water supply needs.

8.4 - Future Use of Surface Water

Using surface water in terms of developing a long-term water supply are limited. Surface water in the Kaweah River system, as well as the Friant-Kern Canal, is fully appropriated, primarily by agricultural users. There is, however, the potential for the City to buy surface water rights as individual farmers in the surrounding area take land out of production and convert it to other uses or wish to sell for some other reason.

There are disadvantages to reliance upon surface water for Exeter's municipal water supply. The Friant-Kern Canal is periodically shut down for maintenance and wells must be relied upon during such shutdown periods. Other surface water supplies may be subject to supply limitations during drought periods. The City's limited financial resources make the acquisition of some types of surface water rights difficult, even if they are available. Surface water treatment facility construction and operation is costly; dependent upon its point of supply, transport to the City's system would involve significant capital investment. In short, long-term reliance upon surface water supply is not considered an approach which should be considered at this time. Reconsideration of such an approach may be useful or necessary in the future if well water quality or well water supply regulations warrant and if quality surface water is more readily available.

When operating a surface water treatment plant, a few other Federal and State mandated water quality requirements become applicable. Those requirements are listed as follows:

- Surface Water Treatment Rule - Monitors turbidity, Giardia lamblia, viruses, Legionella and heterotrophic plate count bacteria in U.S. drinking water;
- Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) - Include filtering of the surface water to reduce levels of Giardia and Cryptosporidium;
- Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR); and
- Filter Backwash Rule.

8.5 - Future Planning

As a result of the amendments of the Safe Water Drinking Act, source water protection has become a greater national priority. A more comprehensive watershed-based prevention approach shall be applied to improve and preserve the quality of the groundwater source. Source Water Assessments are required to establish and protect groundwater supplies through the Wellhead Protection Program. The key elements of the program are as follows:

- Delineate the boundaries of the areas providing source water for public water supply systems;
- Provide inventory of the sources of regulated and certain unregulated contaminants of concern within the delineated areas;
- Determine the vulnerability of each water source to contamination; and
- Provide public education and outreach.

The program could ultimately lead to the development of a comprehensive prevention and protection program that includes monitoring.

SECTION 9 - WATER SUPPLY AND CONSERVATION

9.1 - Water Supply

In 2018, the City produced 631,604,276 gallons of water, or 1.73 million gallons per day. Usage during the peak month (August) in 2018 was 2.31 million gallons per day. This usage has been consistent over the last five years. Based on actual metered data from 2018, the present average water usage per person per day is 152 gallons. The average over the last five years of available data is 140 gpcd. This usage is low compared to other Central Valley cities which are typically between 145 to 300 gpd.

Prior to the California drought, water usage was slightly higher. Due to the drought and groundwater overdraft, the City instituted conservation measures, similar to other water providers and the water usage around California dropped compared to 10 years ago. However, a lessening of drought conditions could reduce public consciousness regarding the overdrafted groundwater basin and the need for water conservation and could result in an increase in Exeter's water usage without a corresponding increase in a safe water supply. It is important that Exeter take continuing effective action to achieve water conservation and will likely be required to in upcoming years due to the Sustainable Groundwater Management Act (SGMA). Such action will not only guard against a water supply crisis but will also reduce current and future need for the supply and storage facilities recommended elsewhere in this report which will reduce capital costs, operating costs, and consumer rates for both water and wastewater.

9.2 - Sustainable Groundwater Management Act (SGMA)

SGMA was signed by Governor Jerry Brown on September 16, 2014 as a three-bill legislative package, including AB 1739, SB 1168, and SB 1319. SGMA provides the framework to monitor and manage existing groundwater supplies and provides guidelines for usage and conservation to eliminate or reduce groundwater overdrafting.

The SGMA necessitates the formation of Groundwater Sustainable Agencies (GSA) in California. The Greater Kaweah GSA was formed in August 2016 as a Joint Powers Authority between Kaweah Delta Water Conservation District, Kings County Water District, Lakeside Irrigation Water District, St. John's Water District, Tulare County, and California Water Service Company. The Greater Kaweah GSA covers several cities in the Central Valley, including Exeter, Farmersville, Woodlake, a major portion of Ivanhoe, and a minor portion of Hanford as shown on Figure 9-1, Greater Kaweah GSA.

One of the GSA priorities is to establish a Groundwater Sustainability Plan (GSP) for the region. The plan will outline how the basin will avoid the adverse effects of overdraft and achieve balanced levels of groundwater to reach sustainability. Although the GSP hasn't been created yet for this subbasin, it can be expected that the plan will have an effect on Exeter, its water usage, monitoring, and ability to drill new wells in the future. The GSP is being produced by a consultant for the GSA and must be completed by 2020, with a 20-year implementation period (2040).

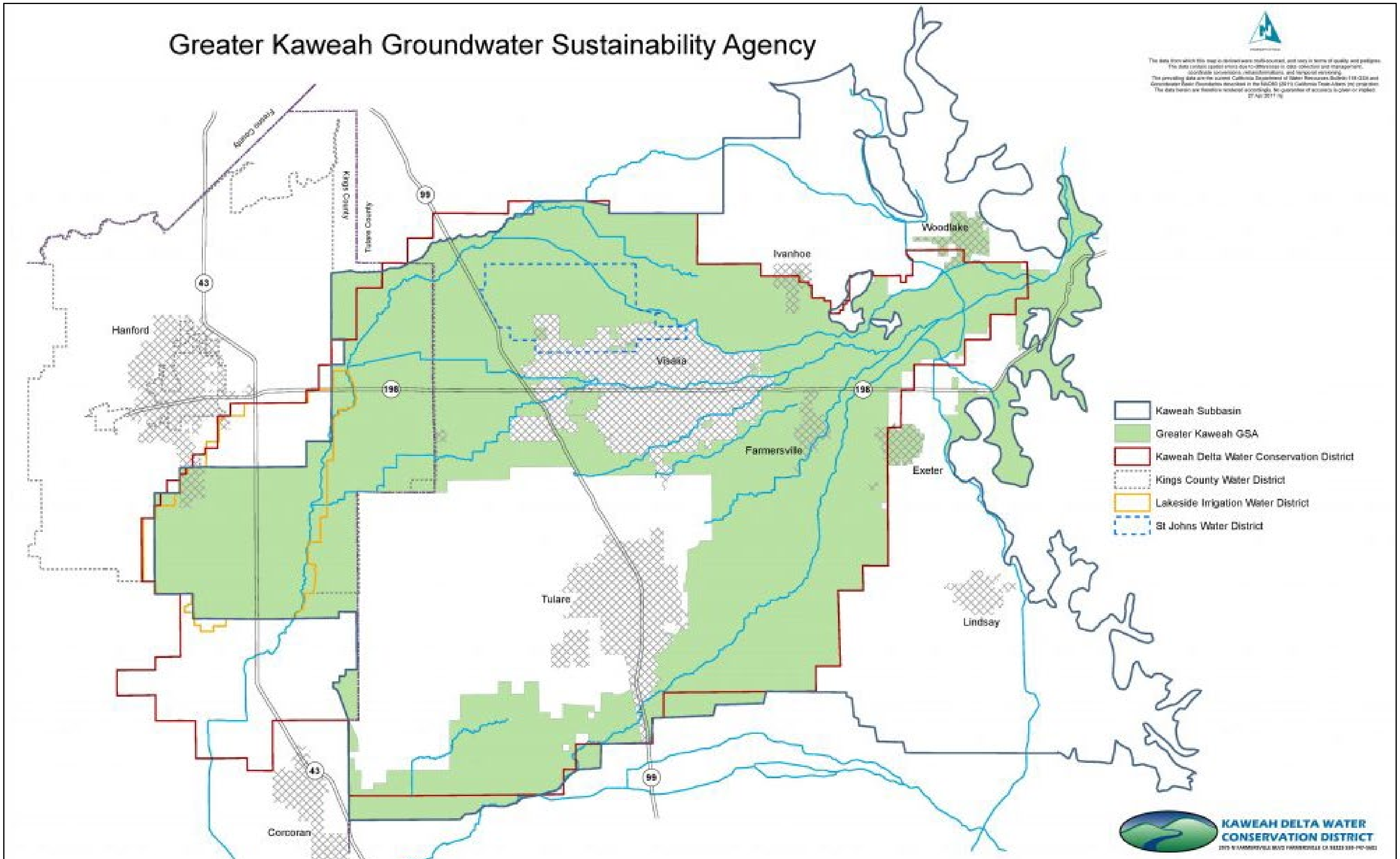


Figure 9-1
Greater Kaweah Groundwater Sustainability Agency

Among other groundwater related initiatives, the GSP will likely include conservation measures, methods for evaluating and recording groundwater levels and water usage, water use restrictions, water reuse and recharge opportunities, and limitations on creating new water sources.

9.3 - Water Conservation

The balance of this chapter describes typical water conservation alternatives and estimates the impact such measures would have on average daily consumption per person. The implementation of these measures should, in each instance, be evaluated by the City Council based on cost, community impact, and long-term effectiveness. Whichever measures may be selected, their implementation should be accompanied by an ongoing and effective public education/public participation water conservation program.

9.4 - Continued Use of Water Meters

On January 1, 2005, the State of California passed Assembly Bill 2572, a law that requires the installation of water meters on all commercial and residential properties. The bill requires an urban water supplier, beginning on or before January 1, 2010, subject to certain exceptions, to charge each customer based on the actual volume of deliveries as measured by the required water meter. The City of Exeter has metered its water for many years and is, therefore, in compliance with Assembly Bill 2572.

9.5 - Xeriscape Landscaping, New Residences

It is estimated that savings of approximately 40 to 100 gallons per day per capita, during summer months, can be achieved for new residences with Xeriscape landscape design – reduced turf area and usage of low water usage plants. There is no additional cost to the homeowner. However, community resistance can be anticipated if Xeriscape ordinances are implemented. To offset this resistance, the City may consider offering a credit to incentivize adoption and concurrence with this type of design.

Xeriscape (pronounced zeer-eh-scape) is a combination of the Greek word Xeros, which means dry or arid, and the English word Scape, meaning vista. Xeriscape was popularized in Denver, Colorado in 1978 by a water conservation task force of the Denver Water Department.

There are seven principles founded by Xeriscape and they are as follows:

1. Planning;
2. Design;
3. Practical Turf Areas (grass is the thirstiest component of any landscape, so it should be used only where necessary);
4. Appropriate Plants;
5. Appropriate Maintenance;
6. Efficient Irrigation; and
7. Soil Analysis.

9.6 - Miscellaneous Water Conservation Measures

Although the per capita daily savings from these measures cannot be accurately quantified, they can contribute to conservation. Recommended measures include:

- System leak detection and repair programs (using electronic detection equipment). In addition, adoption of a plumbing retrofit ordinance by City Council would have the possibility of requiring all buildings, prior to the change of ownership, to be certified as having water-conserving plumbing fixtures in place;
- Public information and public education programs (brochures, bill-stuffers, etc. motivating purchase of water saving devices and wise water usage (reference Table 9-1); school room water education programs); and
- Water audits - residential, commercial, and industrial.

Table 9-1
Typical Household Water Usage

Task	Efficient Use
Shower	2 gallons per minute ultra-low flow showerhead, 5-minute shower – 10 gallons
Brushing Teeth	Low flow faucet aerator, wet and brush and rinse – 1/8 gallon
Bath Tub	Minimal water level – 10 gallons
Shaving	Minimal water level – 1 gallon
Washing Dishes	Tap off while washing, sink 1/2 full with a rinse bowl – 5 gallons
Lawn Sprinklers	Water early mornings with minimal runoff and evaporation
Car Washing	Bucket, hose rinse, shut off nozzle – 10 gallons
Washing Hands	Tap off while washing – 1/4 gallon
Toilet Flushing	Ultra-low flush toilet – 1.6 gallons per flush
Washing Machine	Efficient model with load level set – 25 gallons per load
Automatic Dishwasher	Short Cycle – 12 gallons
Drinking Water	Keep water container in refrigerator – 1/8 gallon

SECTION 10 - CAPITAL IMPROVEMENT PROGRAM (CIP)

10.1 - The Importance of a CIP

A Capital Improvement Program (CIP) is a plan which identifies capital projects and equipment purchases, provides a planning schedule, and identifies financing options for the plan. This WSMP provides recommendations for projects that address existing needs due to past development and growth and budgeting for improvements anticipated to support future growth and development in the City. The City can then use this data to make informed decisions about project priority, funding, and timelines to establish a CIP which becomes a roadmap for developing and improving infrastructure.

10.1.1 - COST ESTIMATE METHODOLOGY

The preliminary opinion of probable construction costs for the projects proposed in this WSMP were developed using unit construction cost assumptions obtained from similar projects in California, Tulare County, and those completed by QK, as well as input from City of Exeter staff. This resulted is the best estimate based on information available.

These costs do not include right of way acquisition. These costs also do not include a separate line item for possible increases due to additional requirements and coordination that may be needed when the project is located near or crossing an existing railroad, waterway, or other agency facility. Such costs would be captured in the project contingency.

More detailed estimates for the projects should be developed as projects progress and when preliminary engineering designs are completed. These cost estimates are to be used primarily for project planning and budgeting. More detailed cost estimates shall also be prepared prior to submitting any grant funding applications.

As such, the actual project costs may vary from the planning level budget estimates shown here. Project managers must consider all factors when determining the actual funding that will be necessary to complete projects and further develop funding as each project is developed.

10.1.2 - CONSTRUCTION COST INDEX

The Construction Cost Index (CCI), established and reported every year by Engineering News Record magazine, can be used to estimate the current value of a project based on historical data or past bid results. The estimated construction costs of the projects listed in this WSMP are likely to be different in one, five, or 10 years. With the CCI, one can estimate the value of the project in the future by applying the index over each year that passes. The estimated construction costs contained in this WMP are based on today’s costs.

10.1.3 - *CONSTRUCTION COST CONTINGENCIES*

Site conditions vary for all projects. Since many of the projects listed in this chapter are conceptual in nature, it is difficult to foresee all conditions that need to be considered. For unforeseen events and field conditions, a 15% contingency has been added to the overall project subtotal, which includes construction, engineering, survey, environmental, etc.

10.2 - Capital Improvement Projects

The water usage is based on growth trends and land uses outlined in the General Plan. Using the water-model and basic numerical comparisons, several deficiencies were identified in the existing and future systems and recommendations for improvement projects to address these deficiencies are listed below. Below is a list of the identified projects grouped by near-term, mid-period, long-term needs and those related to the Tooleville connection. See Figure 10-1 for a map that identifies these projects throughout the City.

10.2.1 - *NEAR-TERM NEEDS*

The projects that need to be implemented in the near-term are listed below in their order of priority and estimated timeline of necessity:

1. W1 and W2 – (Now) Evaluate if Wells E5W and/or E10W can be rehabbed and brought back online;
2. W3, W4, and W5 – (Now) Run pump tests on wells E6W, E9W, and E11W to determine if larger pumps would increase well production;
3. T1 – (Now) Construction of a 0.50 MG water storage tank and booster station. Actual size may vary, depending on results of Projects W1 through W5 above;
4. W6 and W7 – (Within 1-2 years of constructing tank) Rehabilitation of two wells (Wells E12W and E14W) which will maintain pressure in the water system and can be used during additional water demands like fire flow;
5. P1 and P2 – (Within next 5 years) Replacement of the City's water pipelines as shown in Figure 10-1; and
6. W8 – (Urgency is dependent on results of projects W1 to W7) Construction of one or two new wells, with a minimum combined capacity of 1,100 gpm. This could be less if production of existing wells is increased.

10.2.2 - *MID-PERIOD NEEDS*

Mid-period needs for the City would be based on the population growth rate and demand:

1. W9 – (Timing is contingent on production of existing wells and any new wells and the actual growth rate. Anticipated need for a new well is within the next 10 years) Construction of a new well with capacity based on growth rate and performance of existing wells (ultimate total capacity of all wells by year 2030 needs to be 5,575 gpm);

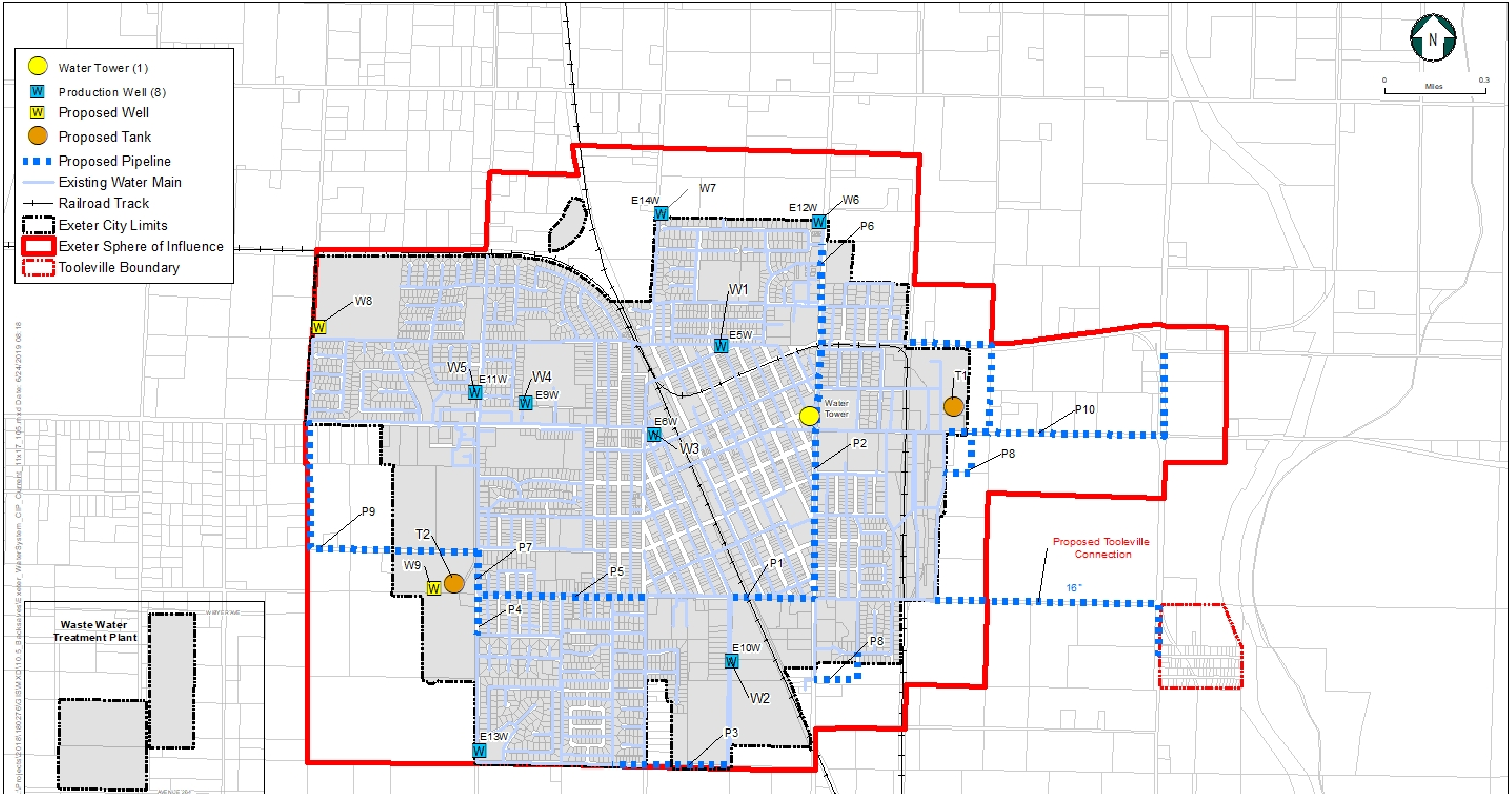


Figure 10-1
Capital Improvement Projects

2. P3 to P7 – (Timing is contingent on growth and interest of new developers. Anticipated need in 8-12 years) Upsizing and installation of new water pipelines is based on the City's growth and expansion within the Sphere of Influence; and
3. T2-A - (Tank not needed if full 0.50 MG tank was installed under T1, above. Otherwise, timing is contingent on growth and production of wells at the time). If a tank less than 0.50 MG is installed in the near-term, the intermediate needs will need to be reevaluated at that time, with the difference in storage needed by 2030.

10.2.3 - LONG-TERM NEEDS

Long-term needs are based on the growth and expansion of the City based on the General Plan:

1. W10 – (Timing is contingent on production of existing wells and any new wells and the actual growth rate. Anticipated need for an additional well is in 15-20 years) Construction of a new well (location to be determined in the future) with capacity based on growth rate and performance of existing wells (ultimate total capacity of all wells by year 2030 needs to be 5,575 gpm);
2. T2-B - (Tank not needed if full 0.50 MG tank was installed under T1, above. Otherwise, timing is contingent on growth and production of wells at the time) If a tank less than 0.50 MG is installed in the near-term, the difference in storage will need to be installed by 2030; and
3. P8 to P10 – (Timing is contingent on growth and interest of new developers. Anticipated need in 12-15 years) Extending the water lines to the growth areas within the Sphere of Influence.

10.3 - Construction Costs

The anticipated construction costs for the identified projects are summarized in Table 10-1. Assumptions used in the preparation of the construction costs are as follows:

- The near-term needs costs are based on the current pricing of material per foot;
- The mid-term needs costs are increased by 10% based on the probable increase in dollar value;
- The long-term needs costs are increased by 20% based on the probable increase in dollar value;
- Tooleville water connection improvement costs are based on current pricing of material per foot;
- The construction management costs are assumed to be approximately 15% of the capital improvement costs;
- The soft costs which include engineering, survey, environmental, administration, and legal fee is assumed to be approximately 25% of the capital improvement costs;
- No costs for right of way and land acquisition have been included;
- Project costs are the sum of capital costs, construction management costs, and soft costs; and
- To be conservative for any project, an additional 15% of the total project costs is added for contingencies.

Table 10-1
Capital Improvement Program

Improvement No.	Improvement Type	Alignment	Limits	Pipeline Improvements: Existing Diameter (Inches)	Pipeline Improvements: New/ Replace/ Repair	Infrastructure Costs: New Size/ Diameter (Inches)	Infrastructure Costs: Length (Feet)	Infrastructure Costs: Unit Cost ($/Unit)	Capital Improvement Cost	Construction Management Cost	Soft Costs (Engineering, Survey, Administration, Environmental, and Legal Fees)	Contingency	Project Total	Suggested Cost Allocation: Existing Users	Suggested Cost Allocation: Future Users
Near-term Needs															
W1	Supply Well	E5W							$10,000	$1,500	$2,500	$2,100	$16,100	100%	—
W2	Supply Well	E10W							$10,000	$1,500	$2,500	$2,100	$16,100	100%	—
W3	Supply Well	E6W							$50,000	$7,500	$12,500	$10,500	$80,500	100%	—
W4	Supply Well	E9W							$50,000	$7,500	$12,500	$10,500	$80,500	100%	—
W5	Supply Well	E11W							$50,000	$7,500	$12,500	$10,500	$80,500	100%	—
T1	Water Storage Tank & Booster Station	Dobson Field	North of Rocky Hill Drive		New	0.5 MG			$1,500,000	$225,000	$375,000	$315,000	$2,415,000	100%	—
W6	Supply Well	E12W			Repair				$25,000	$3,750	$6,250	$5,250	$40,250	100%	—
W7	Supply Well	E14W			Repair				$25,000	$3,750	$6,250	$5,250	$40,250	100%	—
P1	Pipeline	Firebaugh Avenue	Kaweah Avenue to Industrial Drive	10	Replace	12	4,613	$120	$181,251	$27,188	$45,313	$38,063	$291,814	50%	50%
P2	Pipeline	Kaweah Avenue	Sequoia Dr. to Firebaugh Ave.	8 and 10	Replace	12	1,323	$137	$553,560	$83,034	$138,390	$116,248	$891,232	50%	50%
W8	Supply Well	Vine Street	North of Vine Street near Elberta Road		New				$1,000,000	$150,000	$250,000	$210,000	$1,610,000	—	100%
								Subtotal	**$3,454,811**	**$518,222**	**$863,703**	**$725,511**	**$5,562,246**		
Mid-term Needs															
W9	Supply Well	Firebaugh Avenue	West of Belmont Road near Firebaugh Avenue		New				$1,000,000	$150,000	$250,000	$210,000	$1,610,000	50%	50%
P3	Pipeline	Glaze Ave.	Industrial Dr. to Alley East of Orange Ave.		New	10	1,802	$90	$162,180	$24,327	$40,545	$34,058	$261,110	25%	75%
P4	Pipeline	Belmont Rd.	Powell Ave. to Firebaugh Ave.		New	10	632	$104	$65,728	$9,859	$16,432	$13,803	$105,822	25%	75%
P5	Pipeline	Firebaugh Ave.	Filbert Rd. to Belmont Rd.		New	12	2,625	$120	$315,000	$47,250	$78,750	$66,150	$507,150	25%	75%
P6	Pipeline	Kaweah Ave.	Sequoia Dr. to Atkinson Way		New	12	973	$137	$133,301	$19,995	$33,325	$27,993	$214,615	25%	75%
P7	Pipeline	Belmont Rd.	Firebaugh Ave. to Chestnut St.		Replace	10	723	$104	$75,192	$11,279	$18,798	$15,790	$121,059	25%	75%
T2-A	Water Storage Tank & Booster Station	SW Corner of Town			New	0.50 MG			$1,500,000	$225,000	$375,000	$315,000	$2,415,000	—	100%
								Subtotal	**$3,251,401**	**$487,710**	**$812,850**	**$682,794**	**$5,234,756**		
								10% Increased Subtotal	**$3,576,541**	**$536,481**	**$894,135**	**$751,073**	**$5,758,232**		

Table 10-1
Capital Improvement Program (Continued)

Improvement No.	Improvement Type	Alignment	Limits	Pipeline Improvements: Existing Diameter (Inches)	Pipeline Improvements: New/ Replace/ Repair	Infrastructure Costs: New Size/ Diameter (Inches)	Infrastructure Costs: Length (Feet)	Infrastructure Costs: Unit Cost ($/Unit)	Capital Improvement Cost	Construction Management Cost	Soft Costs (Engineering, Survey, Administration, Environmental, and Legal Fees)	Contingency	Project Total	Suggested Cost Allocation: Existing Users	Suggested Cost Allocation: Future Users
Long-term Needs															
W10	Well	Determined Later by City			New				$1,000,000	$150,000	$250,000	$210,000	$1,610,000	—	100%
T2-B	Water Storage Tank & Booster Station	SW Corner of Town			0.50 MG				Budget accounted for under T2-A						
P8		Future Industrial Development		New		6	1,000	$85	$85,000	$12,750	$21,250	$17,850	$136,850	—	100%
P9		Future Residential Development		New		8	6,400	$85	$544,000	$81,600	$136,000	$114,240	$875,840	—	100%
P10		Future Public Facilities and Residential Development		New		10	3,130	$90	$281,700	$42,255	$70,425	$59,157	$453,537	—	100%
								Subtotal	**$1,910,700**	**$286,605**	**$477,675**	**$401,247**	**$3,076,227**		
								20% Increased Subtotal	**$2,292,840**	**$343,926**	**$573,210**	**$481,496**	**$3,691,472**		
								TOTAL IMPROVEMENT COSTS	**$9,324,192**	**$1,398,629**	**$2,331,048**	**$1,958,080**	**$15,011,950**		

10.4 - Potential Funding Sources

Funding for water-related programs is an increasingly important part of any municipality's infrastructure program. The demands of new regulation through the SGMA and the State, population growth, and the heightened concerns triggered by expanded testing and treatment, all contribute to the heightened demand on funding sources.

The foundation of any expansion or replacement of water infrastructure begins with local rate structures supported by ratepayers and fees contributed through growth and development to allay the impact on infrastructure demand. This base funding should be well-planned and periodically updated to support as much of the need for infrastructure financing through internally generated base funding. These local best efforts to fund base needs is also a requirement of the State, when seeking alternative or additional funding through many State grant and loan programs. Inadequate rate and fee structures may be a reason for denial of eligibility for many funding programs.

In recent years, new financing tools and funding sources have emerged, and innovative strategies are being proposed to meet growing infrastructure needs. This has been especially true at the State level as well as some expanded funding from Federal sources relayed through State agencies. State funding has particularly benefitted from the implementation of the California Cap and Trade Climate Change Program as well as several Statewide bond issuances. New awareness about underfunding of disadvantaged areas of the State such as the Central Valley also is receiving renewed funding attention. Additionally, there are newly creative financing methodologies emerging that can support water and related infrastructure needs of municipalities.

At the State level, water system improvements are most often supported by the Drinking Water State Revolving Fund (DWSRF) from the California Department of Water Resources (DWR). The DWSRF administers a variety of funding flows from State and Federal sources and provides that funding through a combination of grants, loans, and forgivable loans to municipalities, schools, and special districts in California. The DWR's primary mission is to preserve, enhance, and restore the quality of California's water resources and for the protection of the environment, public health, and all beneficial uses. The projects are differentiated between services for existing users and services anticipated for future developments.

In addition to this ongoing source of infrastructure funding, grant programs that can fund individual projects of community needs are always developing, either from specific legislation or through the passing of voter-backed infrastructure bonds. For example, In June 2018, California voters passed a $4 billion parks, environment, and water bond (Proposition 68) that contains various future grant revenue sources that will be of great interest to the municipal water users.

Although some of the revenue streams are not directly related to water and related infrastructure funding, there are a number that can directly impact the projects envisioned for municipalities. More than 10 new grant programs are expected to emerge from this

approved bond in 2019. These water-related and environmental grant programs will be allocated to specific State departments, develop guidelines for spending in the spring, 2019 and be available for competitive grant funding cycles starting in the summer and fall of 2019. Potential grant funds are expected to be expended in the next two to five years.

In addition, an ever-changing group of grant opportunities periodically releases a water infrastructure financing opportunity that may support some needed project of your community master plan. This can come from a wide range of Federal and State agencies that includes the USDA, State Department of Natural Resources, Housing Community Development, CalEPA and several others. Exact timelines and dates of release are less predictable than in the past, which heightens the need for preparedness for when those opportunities do arise.

Since 2015, California's landmark Cap and Trade Emissions Reduction Program is also yielding a wide range of new funding opportunities related to water supply and conservation, groundwater stabilization, conservation enhancement, and other related areas. These broadly defined programs can be accessed through the California Climate Investments website to track new opportunities or learn more about guidelines for funding and eligibility (http://www.caclimateinvestments.ca.gov/). To date, more than $5 billion has been raised through the Cap and Trade Emissions Auctions. These programs and funding opportunities are spread among seven different State agencies and are made available through periodic competitive grant cycles to meet municipal water needs.

Of particular note, is the latest effort to commit Cap and Trade funds to support underfunded water infrastructure in disadvantaged communities with a wide range of contamination or failing supply concerns. In the proposed 19-20 California State Budget proposal, a consensus has developed to spend $140 million annually, for the next 10 years, from Cap and Trade specifically on this targeted need. These funds will be available as grants through a designated program administered through the DWR.

Preparing a community to gain access is an important step in successfully applying for and receiving grant funds that can support needed water improvements or expansion. Some critical steps to prepare include:

1. Updating all rate and fee structures to reflect acceptable levels of contribution based on State criteria and community income standards.
2. Complete and update rate structures for ratepayers and fees for development to reflect current planning standards and community income levels.
3. To the greatest extent possible, complete environmental review, preliminary design cost estimation and land acquisition as much in advance as possible. This will make any funding application more competitive as it demonstrates the ability to move quickly and effectively to initiate and complete a proposed infrastructure project.

Finally, there are a wide range of alternative funding mechanisms that may play a role in funding a City's particular projects or improvements in the coming years. The State of California has created new district-based mechanisms that can facilitate growth related

infrastructure needs. The new Enhanced Infrastructure Funding District is but one example of these new and emerging financing methodologies. In addition, traditional Community Facility Districts and similar methods remain in wide use. As the need for alternatives grows with the infrastructure needs of California, new sources and methods will continue to evolve.

SECTION 11 - CONCLUSIONS AND RECOMMENDATIONS

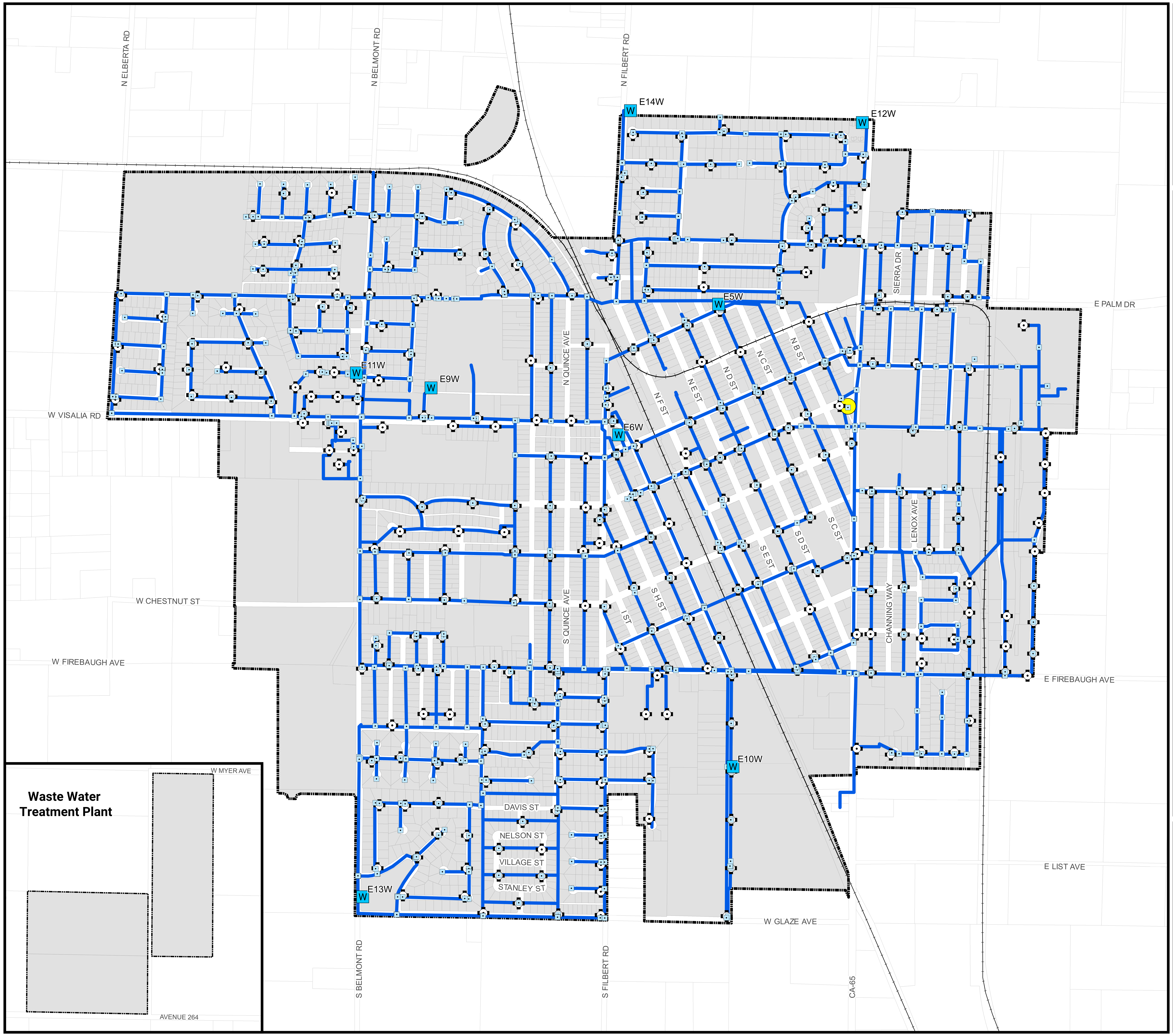
This WSMP has reached the following conclusions and recommendations.

1. The City's total annual water usage has remained relatively constant since the drought. Water usage from 2014 to 2018 has varied between 525,000,000 to 590,000,000 gallons per year.
2. Per capita water demand used in this report is based on the average of the last 10 years of well production data and is calculated to be 175 gallons per day (156 gpd in 2018, 222 gpd in 2008 and 248 gpd in 1996).
3. The existing water system currently does not meet California Waterworks Standards for Maximum Day Demand, Peak Hour Demand, or Maximum Day plus Fire Flow.
4. All existing wells should be analyzed to determine if they can be rehabilitated or improved in some way to maximize production. The City could use existing funds to pursue this initial investigative endeavor, the results of which may be eligible for future grants and/or loans.
5. One or more wells may be needed to increase the existing system capacity an additional 1,100 gpm to meet MDD with the largest source offline. If the City does not have adequate funds for a new well, they could apply for a grant or loan.
6. A 500,000-gallon (0.50 MG) storage tank and booster station should be installed in the next three to five years, determined by the actual population growth. If the City does not have adequate funds for a new tank, they could apply for a grant or loan.
7. The community is estimated to grow to approximately 15,062 by year 2030, necessitating significant additions to the water facilities. This residential growth will occur principally within the City's Sphere of Influence.
8. Additional groundwater wells are required by 2030 with a cumulative capacity of 2,250 gpm. One or more of them need to be installed as soon as possible (1,110 gpm) as mentioned above to meet California Waterworks Standards for existing MDD with the largest source offline. Timing of other well(s) shall be determined by the actual population growth. The City should include these needs in a future rate study so that the improvements can funded by future connection and developer fees.
9. If the City elects to install a smaller tank (less than the 0.50 MG mentioned above), an additional tank will need to be installed by 2030 to cover the storage needs of complete build-out of the General Plan area. The City should include these needs in a future rate study so that the improvements can funded by future connection and developer fees.
10. Further water conservation can reduce long-term costs of system operation and, concurrently, of wastewater system operations. The Director of Public Works should continue to work with the City Council and City Administration to bring to the City Council any recommendations for further water conservation measures and meet future GSA requirements.
11. The City Administration and City Engineer should be directed to pursue, on a continuing basis, the various viable alternatives for long-term water supply augmentation and the funding to support such improvements.

APPENDICES

Appendix A

Exeter Water System Map



City of Exeter Water System

Water Tower (1)

Production Well (8)

Water Hydrant (323)

Water System Valve (891)

Water Main (248,609.15 lf)

Railroad Track

City Limit

N

0 0.25
Miles

This map was prepared using QK's Geographic Information System, utilizing data from the City of Exeter and the County of Tulare. Every reasonable effort has been made to assure accuracy of the data, however QK, the City of Exeter, and the County of Tulare make no warranty, representation, or guarantee regarding the precision of this map. If is intended for display purposes and does not replace official records.

Version: 1.0
Date: 01/23/2019

APPENDIX B

SCE HYDRAULIC TESTS

SCE Hydraulic / Industrial Services

Normal Operating Conditions
Test Summary

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL® Company

Pumping Plant Name	Pump Location	Pump Ref #	Test Date	CSS Service Account #	Pump Type	Motor HP	Disch PSI	Suct. PSI	Pump Level, Ft.	Static Level, Ft.	Draw down Ft.	Total HD, Ft.	Cust. GPM	Test GPM	Acre Ft. / 24 Hours	kW Input	HP Input	Motor Load %	kWh / Acre Ft.	Test Eff. %	Impr. Eff. %
E-11W	BELMONT/ VIS ROAD PMP, EXETER, CA 93221	10180	4/17/18	1226351	Turbine Well	75	64.1		135.6	113.5	22.1	283.7	799	751	3.32	65	88	110.04	473	61	69
E-9W	27260 PLANT, EXETER, CA 93221-0000	3892	4/17/18	1226352	Turbine Well	75	58.9		124.7	117	7.7	260.8	443	439	1.94	36	49	61.83	450	59	69
E-12W	41524 PLANT, EXETER, CA 93221	24691	4/17/18	24474616	Submersible Well	100	48.2		331.3	119	212.3	442.6	155	206	.91	30	40	36.04	796	57	65
E-14W	42703 PLANT 93221	44050	4/17/18	32330007	Turbine Well	100	188.1		183.3	123.3	60	617.8		186	.82	46	62	59.23	1352	47	69

Confidential/Proprietary Information

November 16, 2018

DAYMON QUALLS
EXETER, CITY OF
PO BOX 237
EXETER, CA 93221-1805

HYDRAULIC TEST RESULTS: E-6W
Location: 14530 PLANT G/PALM, EXETER, CA 93221
Cust #: 0-001-4868 Serv. Acct. #: 001-2263-82
Meter: 355150-002166 Pump Ref.#: 3890

In accordance with your request, an energy efficiency test was performed on your turbine well pump on November 15, 2018. If you have any questions regarding the results which follow, please contact Darren Henschel at (559) 331-0820.

Equipment
HP: 75.0

Pump: POMONA No: NO PLATE
Motor: US No: G71910X06X098R062R5

Results	Test 1	Test 2	Test 3
Discharge Pressure, PSI	**75.6**	**85.2**	**95.3**
Standing Water Level, Feet	**128.5**	**128.5**	**128.5**
Drawdown, Feet	**9.7**	**8.5**	**7.0**
Discharge Head, Feet	**174.6**	**196.8**	**220.1**
Pumping Water Level, Feet	**138.2**	**137.0**	**135.5**
Total Head, Feet	**312.8**	**333.8**	**355.6**
Capacity, GPM	**586**	**520**	**424**
GPM per Foot Drawdown	**60.4**	**61.2**	**60.6**
Acre Feet Pumped in 24 Hours	**2.590**	**2.298**	**1.874**
kW Input to Motor	**56.8**	**54.9**	**52.2**
HP Input to Motor	**76.2**	**73.6**	**70.0**
Motor Load (%)	**96.5**	**93.3**	**88.7**
Measured Speed of Pump, RPM	**1,785**		
Customer Meter, GPM	**618**	**550**	**450**
kWh per Acre Foot	**526**	**573**	**669**
Overall Plant Efficiency (%)	**60.8**	**59.5**	**54.4**

The standing water level is based on a 15 minute shut-off.

Russell Johnson
Manager
Hydraulic Services

Confidential/Proprietary Information

November 16, 2018

DAYMON QUALLS
EXETER, CITY OF
PO BOX 237
EXETER, CA 93221-1805

PUMPING COST ANALYSIS: E-6W
Location: 14530 PLANT G/PALM, EXETER, CA 93221

CSS Cust #:	0-001-4868	CRM Cust #:	0064881923	Pump Ref.#:	3890
CSS Serv. Acct.:	001-2263-82	CRM Serv. Acct.:	0050570056	Meter:	355150-002166

The following energy efficiency analysis is presented as an aid to your cost accounting. This is an estimate based on the conditions present during the Edison pump test performed on November 15, 2018, billing history for the past 12 months, and your current rate of TOU-PA2A.

Assuming that water requirements will be the same as for the past year, and all operating conditions (annual hours of operation, head above, and water pumping level) will remain the same as they were at the time of the pump test, it is estimated that:

1. Overall plant efficiency can be improved from 60.8 % to 69.0 %.
2. This can save you up to 3,712 kWh and $711.06 annually.
3. These kWh savings translate to a 1.61 - ton decrease in CO_2

		Plant Efficiency	
	Existing	Improved	Savings
Total kWh	**31,152**	**27,440**	**3,712**
kW Input	**56.8**	**50.0**	**6.8**
kWh per Acre Foot	**526**	**464**	**63**
Acre Feet per Year	**59.2**		
Average Cost per kWh	**$0.19**		
Average Cost per Acre Foot	**$100.83**	**$88.81**	**$12.02**
Overall Plant Efficiency (%)	**60.8**	**69.0**	
Total Annual Cost	**$5,966.85**	**$5,255.79**	**$711.06**

It is sincerely hoped that this information will prove helpful to you, and that your concerns over maintaining optimum pumping efficiency will be continued. If you have any questions regarding this report, please contact Darren Henschel at (559) 331-0820.

Russell Johnson
Manager
Hydraulic Services

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Confidential/Proprietary Information

April 19, 2018

FELIX ORTIZ
EXETER, CITY OF
100 N C STREET
EXETER, CA 93221-1805

HYDRAULIC TEST RESULTS: E-9W
Location: 27260 PLANT, EXETER, CA 93221-0000

Cust #:	0-001-4868	Serv. Acct. #:	001-2263-52
Meter:	254000-026261	Pump Ref.#:	3892

In accordance with your request, an energy efficiency test was performed on your turbine well pump on April 17, 2018. If you have any questions regarding the results which follow, please contact Darren Henschel at (559) 331-0820.

Equipment

HP: 75.0

Pump:	N/A	No:	NO PLATE
Motor:	US	No:	M05BF60AMD27D14

Results	Test 1
Discharge Pressure, PSI	**58.9**
Standing Water Level, Feet	**117.0**
Drawdown, Feet	**7.7**
Discharge Head, Feet	**136.1**
Pumping Water Level, Feet	**124.7**
Total Head, Feet	**260.8**
Capacity, GPM	**439**
GPM per Foot Drawdown	**57.0**
Acre Feet Pumped in 24 Hours	**1.940**
kW Input to Motor	**36.4**
HP Input to Motor	**48.8**
Motor Load (%)	**61.8**
Measured Speed of Pump, RPM	**1,790**
Customer Meter, GPM	**443**
kWh per Acre Foot	**450**
Overall Plant Efficiency (%)	**59.2**

Russell Johnson
Manager
Hydraulic Services

Confidential/Proprietary Information

April 19, 2018

FELIX ORTIZ
EXETER, CITY OF
100 N C STREET
EXETER, CA 93221-1805

PUMPING COST ANALYSIS: E-9W
Location: 27260 PLANT, EXETER, CA 93221-0000

CSS Cust #:	0-001-4868	CRM Cust #:	0064881923	Pump Ref.#:	3892
CSS Serv. Acct.:	001-2263-52	CRM Serv. Acct.:	0050565814	Meter:	254000-026261

The following energy efficiency analysis is presented as an aid to your cost accounting. This is an estimate based on the conditions present during the Edison pump test performed on April 17, 2018, billing history for the past 12 months, and your current rate of TOU-PA2A.

Assuming that water requirements will be the same as for the past year, and all operating conditions (annual hours of operation, head above, and water pumping level) will remain the same as they were at the time of the pump test, it is estimated that:

1. Overall plant efficiency can be improved from 59.2 % to 69.0 %.
2. This can save you up to 33,179 kWh and $3,362.72 annually.
3. These kWh savings translate to a 14.43 - ton decrease in CO_2

		Plant Efficiency	
	Existing	Improved	Savings
Total kWh	**234,120**	**200,941**	**33,179**
kW Input	**36.4**	**31.2**	**5.2**
kWh per Acre Foot	**450**	**386**	**64**
Acre Feet per Year	**519.9**		
Average Cost per kWh	**$0.10**		
Average Cost per Acre Foot	**$45.64**	**$39.17**	**$6.47**
Overall Plant Efficiency (%)	**59.2**	**69.0**	
Total Annual Cost	**$23,728.06**	**$20,365.34**	**$3,362.72**

It is sincerely hoped that this information will prove helpful to you, and that your concerns over maintaining optimum pumping efficiency will be continued. If you have any questions regarding this report, please contact Darren Henschel at (559) 331-0820.

Russell Johnson
Manager
Hydraulic Services

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Confidential/Proprietary Information

November 16, 2018

DAYMON QUALLS
EXETER, CITY OF
PO BOX 237
EXETER, CA 93221-1805

HYDRAULIC TEST RESULTS: E-11W
Location: BELMONT/VIS ROAD PMP, EXETER, CA 93221
Cust #: 0-001-4868 Serv. Acct. #: 001-2263-51
Meter: 256000-185470 Pump Ref.#: 10180

In accordance with your request, an energy efficiency test was performed on your turbine well pump on November 15, 2018. If you have any questions regarding the results which follow, please contact Darren Henschel at (559) 331-0820.

Equipment
HP: 75.0

Pump: FLOWAY No: 87-31719
Motor: US No: 409/N06N097R074F15

Results	Test 1	Test 2	Test 3
Discharge Pressure, PSI	**61.4**	**74.3**	**88.4**
Standing Water Level, Feet	**116.3**	**116.3**	**116.3**
Drawdown, Feet	**22.3**	**21.6**	**20.7**
Discharge Head, Feet	**141.8**	**171.6**	**204.2**
Pumping Water Level, Feet	**138.6**	**137.9**	**137.0**
Total Head, Feet	**280.4**	**309.5**	**341.2**
Capacity, GPM	**719**	**694**	**669**
GPM per Foot Drawdown	**32.2**	**32.1**	**32.3**
Acre Feet Pumped in 24 Hours	**3.178**	**3.067**	**2.957**
kW Input to Motor	**65.5**	**65.7**	**65.8**
HP Input to Motor	**87.8**	**88.1**	**88.2**
Motor Load (%)	**110.2**	**110.5**	**110.7**
Measured Speed of Pump, RPM	**1,782**		
Customer Meter, GPM	**665**	**638**	**610**
kWh per Acre Foot	**495**	**514**	**534**
Overall Plant Efficiency (%)	**58.0**	**61.6**	**65.3**

Russell Johnson
Manager
Hydraulic Services

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Confidential/Proprietary Information

November 16, 2018

DAYMON QUALLS
EXETER, CITY OF
PO BOX 237
EXETER, CA 93221-1805

PUMPING COST ANALYSIS: E-11W
Location: BELMONT/VIS ROAD PMP, EXETER, CA 93221

CSS Cust #:	0-001-4868	CRM Cust #:	0064881923	Pump Ref.#:	10180
CSS Serv. Acct.:	001-2263-51	CRM Serv. Acct.:	0050565479	Meter:	256000-185470

The following energy efficiency analysis is presented as an aid to your cost accounting. This is an estimate based on the conditions present during the Edison pump test performed on November 15, 2018, billing history for the past 12 months, and your current rate of TOU-PA2B.

Assuming that water requirements will be the same as for the past year, and all operating conditions (annual hours of operation, head above, and water pumping level) will remain the same as they were at the time of the pump test, it is estimated that:

1. Overall plant efficiency can be improved from 58.0 % to 69.0 %.
2. This can save you up to 42,476 kWh and $4,602.79 annually.
3. These kWh savings translate to a 18.48 - ton decrease in CO_2

		Plant Efficiency	
	Existing	Improved	Savings
Total kWh	**265,692**	**223,216**	**42,476**
kW Input	**65.5**	**55.0**	**10.5**
kWh per Acre Foot	**495**	**416**	**79**
Acre Feet per Year	**537.0**		
Average Cost per kWh	**$0.11**		
Average Cost per Acre Foot	**$53.61**	**$45.04**	**$8.57**
Overall Plant Efficiency (%)	**58.0**	**69.0**	
Total Annual Cost	**$28,790.39**	**$24,187.60**	**$4,602.79**

It is sincerely hoped that this information will prove helpful to you, and that your concerns over maintaining optimum pumping efficiency will be continued. If you have any questions regarding this report, please contact Darren Henschel at (559) 331-0820.

Russell Johnson
Manager
Hydraulic Services

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Confidential/Proprietary Information

April 19, 2018

FELIX ORTIZ
EXETER, CITY OF
100 N C STREET
EXETER, CA 93221-1805

HYDRAULIC TEST RESULTS: E-12W
Location: 41524 PLANT, EXETER, CA 93221

Cust #:	0-001-4868	Serv. Acct. #:	024-4746-16
Meter:	256000-211703	Pump Ref.#:	24691

In accordance with your request, an energy efficiency test was performed on your submersible well pump on April 17, 2018. If you have any questions regarding the results which follow, please contact Darren Henschel at (559) 331-0820.

Equipment
HP: 100.0

Pump:	BERKELEY	No:	SEP-04
Motor:	FRANKLIN	No:	2791049004

Results	Test 1 @ 39.4 Hz
Discharge Pressure, PSI	**48.2**
Standing Water Level, Feet	**119.0**
Drawdown, Feet	**212.3**
Discharge Head, Feet	**111.3**
Pumping Water Level, Feet	**331.3**
Total Head, Feet	**442.6**
Capacity, GPM	**206**
GPM per Foot Drawdown	**1.0**
Acre Feet Pumped in 24 Hours	**0.911**
kW Input to Motor	**30.2**
HP Input to Motor	**40.5**
Motor Load (%)	**36.0**
Measured Speed of Pump, RPM	
Customer Meter, GPM	**155**
kWh per Acre Foot	**796**
Overall Plant Efficiency (%)	**56.9**

Russell Johnson
Manager
Hydraulic Services

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Confidential/Proprietary Information

April 19, 2018

FELIX ORTIZ
EXETER, CITY OF
100 N C STREET
EXETER, CA 93221-1805

PUMPING COST ANALYSIS: E-12W
Location: 41524 PLANT, EXETER, CA 93221

CSS Cust #:	0-001-4868	CRM Cust #:	0064881923	Pump Ref.#:	24691
CSS Serv. Acct.:	024-4746-16	CRM Serv. Acct.:	0052666630	Meter:	256000-211703

The following energy efficiency analysis is presented as an aid to your cost accounting. This is an estimate based on the conditions present during the Edison pump test performed on April 17, 2018, billing history for the past 12 months, and your current rate of TOU-PA2A.

Assuming that water requirements will be the same as for the past year, and all operating conditions (annual hours of operation, head above, and water pumping level) will remain the same as they were at the time of the pump test, it is estimated that:

1. Overall plant efficiency can be improved from 56.9 % to 65.0 %.
2. This can save you up to 2,790 kWh and $650.14 annually.
3. These kWh savings translate to a 1.21 - ton decrease in CO_2

	Plant Efficiency		
	Existing	Improved	Savings
Total kWh	**22,272**	**19,482**	**2,790**
kW Input	**30.2**	**26.4**	**3.8**
kWh per Acre Foot	**796**	**696**	**100**
Acre Feet per Year	**28.0**		
Average Cost per kWh	**$0.23**		
Average Cost per Acre Foot	**$185.53**	**$162.29**	**$23.24**
Overall Plant Efficiency (%)	**56.9**	**65.0**	
Total Annual Cost	**$5,190.04**	**$4,539.90**	**$650.14**

It is sincerely hoped that this information will prove helpful to you, and that your concerns over maintaining optimum pumping efficiency will be continued. If you have any questions regarding this report, please contact Darren Henschel at (559) 331-0820.

Russell Johnson
Manager
Hydraulic Services

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Confidential/Proprietary Information

November 16, 2018

DAYMON QUALLS
EXETER, CITY OF
PO BOX 237
EXETER, CA 93221-1805

HYDRAULIC TEST RESULTS: E-13W
Location: BELMONT/PARK PLACE, EXETER, CA 93221
Cust #: 0-001-4868 Serv. Acct. #: 029-8297-36
Meter: 259000-064685 Pump Ref.#: 32590

In accordance with your request, an energy efficiency test was performed on your turbine well pump on November 15, 2018. If you have any questions regarding the results which follow, please contact Darren Henschel at (559) 331-0820.

Equipment
HP: 150.0

Pump: FLOWAY No: 62002-1-1
Motor: US No: L0320067223100R01

Results	Test 1 @ 56.7 Hz	Test 2 @ 59.5 Hz	Test 3 @ 50.0 Hz
Discharge Pressure, PSI	**74.8**	**82.2**	**64.5**
Standing Water Level, Feet	**138.3**	**138.3**	**138.3**
Drawdown, Feet	**34.8**	**40.5**	**16.6**
Discharge Head, Feet	**172.8**	**189.9**	**149.0**
Pumping Water Level, Feet	**173.1**	**178.8**	**154.9**
Total Head, Feet	**345.9**	**368.7**	**303.9**
Capacity, GPM	**870**	**991**	**425**
GPM per Foot Drawdown	**25.0**	**24.5**	**25.6**
Acre Feet Pumped in 24 Hours	**3.845**	**4.380**	**1.879**
kW Input to Motor	**92.8**	**106.8**	**59.2**
HP Input to Motor	**124.4**	**143.2**	**79.4**
Motor Load (%)	**79.1**	**91.1**	**50.5**
Measured Speed of Pump, RPM	**1,552**	**1,770**	**1,342**
Customer Meter, GPM	**851**	**918**	**361**
kWh per Acre Foot	**579**	**585**	**756**
Overall Plant Efficiency (%)	**61.1**	**64.4**	**41.1**

Russell Johnson
Manager
Hydraulic Services

Confidential/Proprietary Information

November 16, 2018

DAYMON QUALLS
EXETER, CITY OF
PO BOX 237
EXETER, CA 93221-1805

PUMPING COST ANALYSIS: E-13W
Location: BELMONT/PARK PLACE, EXETER, CA 93221
CSS Cust #: 0-001-4868 CRM Cust #: 0064881923 Pump Ref.#: 32590
CSS Serv. Acct.: 029-8297-36 CRM Serv. Acct.: 0052866314 Meter: 259000-064685

The following energy efficiency analysis is presented as an aid to your cost accounting. This is an estimate based on the conditions present during the Edison pump test performed on November 15, 2018, billing history for the past 12 months, and your current rate of TOU-PA2B.

Assuming that water requirements will be the same as for the past year, and all operating conditions (annual hours of operation, head above, and water pumping level) will remain the same as they were at the time of the pump test, it is estimated that:

1. Overall plant efficiency can be improved from 61.1 % to 69.0 %.
2. This can save you up to 46,025 kWh and $5,131.36 annually.
3. These kWh savings translate to a 20.02 - ton decrease in CO_2

	Plant Efficiency		
	Existing	Improved	Savings
Total kWh	**400,152**	**354,127**	**46,025**
kW Input	**92.8**	**82.1**	**10.7**
kWh per Acre Foot	**579**	**513**	**67**
Acre Feet per Year	**690.8**		
Average Cost per kWh	**$0.11**		
Average Cost per Acre Foot	**$64.59**	**$57.16**	**$7.43**
Overall Plant Efficiency (%)	**61.1**	**69.0**	
Total Annual Cost	**$44,612.95**	**$39,481.59**	**$5,131.36**

It is sincerely hoped that this information will prove helpful to you, and that your concerns over maintaining optimum pumping efficiency will be continued. If you have any questions regarding this report, please contact Darren Henschel at (559) 331-0820.

Russell Johnson
Manager
Hydraulic Services

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Confidential/Proprietary Information

April 19, 2018

FELIX ORTIZ
EXETER, CITY OF
100 N C STREET
EXETER, CA 93221-1805

HYDRAULIC TEST RESULTS: E-14W
Location: 42703 PLANT 93221

Cust #:	0-001-4868	Serv. Acct. #:	032-3300-07
Meter:	256000-211704	Pump Ref.#:	44050

In accordance with your request, an energy efficiency test was performed on your turbine well pump on April 17, 2018. If you have any questions regarding the results which follow, please contact Darren Henschel at (559) 331-0820.

Equipment

HP: 100.0

Pump:	N/A	No:	NO PLATE
Motor:	US	No:	1176930250001M0001

Results	Test 1
Discharge Pressure, PSI	**188.1**
Standing Water Level, Feet	**123.3**
Drawdown, Feet	**60.0**
Discharge Head, Feet	**434.5**
Pumping Water Level, Feet	**183.3**
Total Head, Feet	**617.8**
Capacity, GPM	**186**
GPM per Foot Drawdown	**3.1**
Acre Feet Pumped in 24 Hours	**0.822**
kW Input to Motor	**46.3**
HP Input to Motor	**62.1**
Motor Load (%)	**59.2**
Measured Speed of Pump, RPM	**1,792**
Customer Meter, GPM	
kWh per Acre Foot	**1,352**
Overall Plant Efficiency (%)	**46.7**

Russell Johnson
Manager
Hydraulic Services

Confidential/Proprietary Information

April 19, 2018

FELIX ORTIZ
EXETER, CITY OF
100 N C STREET
EXETER, CA 93221-1805

PUMPING COST ANALYSIS: E-14W
Location: 42703 PLANT 93221

CSS Cust #:	0-001-4868	CRM Cust #:	0064881923	Pump Ref.#:	44050
CSS Serv. Acct.:	032-3300-07	CRM Serv. Acct.:	0053536689	Meter:	256000-211704

The following energy efficiency analysis is presented as an aid to your cost accounting. This is an estimate based on the conditions present during the Edison pump test performed on April 17, 2018, billing history for the past 12 months, and your current rate of TOU-PA2A.

Assuming that water requirements will be the same as for the past year, and all operating conditions (annual hours of operation, head above, and water pumping level) will remain the same as they were at the time of the pump test, it is estimated that:

1. Overall plant efficiency can be improved from 46.7 % to 69.0 %.
2. This can save you up to 62,630 kWh and $6,245.45 annually.
3. These kWh savings translate to a 27.24 - ton decrease in CO_2

	Plant Efficiency		
	Existing	Improved	Savings
Total kWh	**194,112**	**131,482**	**62,630**
kW Input	**46.3**	**31.4**	**14.9**
kWh per Acre Foot	**1,352**	**916**	**436**
Acre Feet per Year	**143.6**		
Average Cost per kWh	**$0.10**		
Average Cost per Acre Foot	**$134.81**	**$91.31**	**$43.50**
Overall Plant Efficiency (%)	**46.7**	**69.0**	
Total Annual Cost	**$19,356.85**	**$13,111.40**	**$6,245.45**

It is sincerely hoped that this information will prove helpful to you, and that your concerns over maintaining optimum pumping efficiency will be continued. If you have any questions regarding this report, please contact Darren Henschel at (559) 331-0820.

Russell Johnson
Manager
Hydraulic Services

APPENDIX C

WELL COMPLETION REPORTS

ORIGINAL
File Original, Duplicate and Triplicate with the
REGIONAL WATER POLLUTION
CONTROL BOARD No. 5
(Insert appropriate number)

WATER WELL DRILLERS REPORT
(Sections 7076, 7077, 7078, Water Code)

STATE OF CALIFORNIA

WELL 05 -- INACTIVE

E5W

Do Not Fill In
No 51936
State Well No.
Other Well No. E5W

(1) OWNER:
Name City of Exeter
Address Exeter, California

(2) LOCATION OF WELL:
County Tulare Owner's number, if any--
R. F. D. or Street No.
Blk 24 of the city of Exeter
North of Willow Street

(3) TYPE OF WORK (check):
New well [X] Deepening [ ] Reconditioning [ ] Abandon [ ]
If abandonment, describe material and procedure in Item 11.

(4) PROPOSED USE (check):
Domestic [ ] Industrial [ ] Municipal [X]
Irrigation [ ] Test Well [ ] Other [ ]

(5) EQUIPMENT:
Rotary [X]
Cable [ ]
Dug Well [ ]

(6) CASING INSTALLED:
SINGLE [X] DOUBLE [ ]

From ft. to ft.	Diam.	Gage or Wall
Plain 180	14 BE	1/4
Perf 456	14 BE	1/4

If gravel packed

Diameter of Bore	from ft.	to ft.

Type and size of shoe or well ring Cone on Bit Size of gravel: Well Sand
Describe joint 24 ft Welded

(7) PERFORATIONS:
Type of perforator used
Size of perforations in., length, by in.
From ft. to ft. Perf. per row Rows per ft.

(8) CONSTRUCTION:
Was a surface sanitary seal provided? [ ] Yes [X] No To what depth ft.
Were any strata sealed against pollution? [ ] Yes [X] No If yes, note depth of strata
From ft. to ft.
Method of Sealing

(9) WATER LEVELS:
Depth at which water was first found 70 ft.
Standing level before perforating ft.
Standing level after perforating ft.

(10) WELL TESTS:
Was a pump test made? [X] Yes [ ] No If yes, by whom? Chas Hammers
Yield 2200 gal./min. with 40 ft. draw down after 8 hrs.
Temperature of water 66 Was a chemical analysis made? [ ] Yes [X] No
Was electric log made of well? [ ] Yes [X] No

(11) WELL LOG:
Total depth 631 ft. Depth of completed well 631 ft.
Formation: Describe by color, character, size of material, and structure.

From ft.	to ft.	Formation
0	4	Soil
4	6	Hard Pan
66	25	Fine Sand
25	27	Sand
27	66	Fine Sand
66	91	Sandy Clay
91	95	Sand
95	109	Sandy Clay Brown
109	117	" " "
117	124	Fine Sand
124	131	Red clay
131	157	Red Sandy Clay
157	189	Red Clay
189	216	Sand
216	221	Clay
221	226	Sand
226	231	Cobbles
231	234	Sandy Clay
234	245	Sand & Cobbles
245	271	Clay
271	298	Sandy Clay
298	320	Clay
320	331	Sandy Clay Sand Streaks
331	339	Clay
339	346	Sandy Clay
346	351	Sand
351	378	Sandy Clay
378	398	Sandy Clay with Sand St
398	402	Clay
402	405	Cobbles
405	409	Sand
409	442	Sandy Clay
442	463	Clay
463	481	Sand
481	486	Sandy Clay
486	507	Sand & Cobbles
507	511	Clay
511	542	Sand
542	553	Sandy Clay
553	561	Sand
561	579	Sandy Clay
579	589	Sand
589	601	Sandy Clay 601to 631San

Work started 12-14 1955 Completed 1-11 1956

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
NAME Knapp & Graham
(Person, firm, or corporation) (Typed or printed)
Address 1155 West Inyo
Tulare, California
[SIGNED] Lillie J. Kinkel
Well Driller
License No. 158751 Dated 1-19-56, 19

ma

Do Not Fill In

№ 76989

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Replaces E6W

Well E6W

ORIGINAL
File with DWR

State Well No.
Other Well No. ~~E6W~~

(1) OWNER:

Name City of Exeter W
Address 137 N. F St.
Exeter, Calif.

(2) LOCATION OF WELL:

County Tulare Owner's number, if any
Township, Range, and Section NW Corner of G St. and
Distance from cities, roads, railroads, etc. Palm St.

(3) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Reconditioning ☐ Destroying ☐
If destruction, describe material and procedure in Item 11.

(4) PROPOSED USE (check):

Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) EQUIPMENT:

Rotary ☒
Cable ☐
Other ☐

(6) CASING INSTALLED:

STEEL: OTHER:
SINGLE ☒ DOUBLE ☐

From ft.	To ft.	Diam.	Gage or Wall
0	400	14	1/4

If gravel packed

Diameter of Bore	From ft.	To ft.
24	0	420

Size of shoe or well ring:
Size of gravel:
Describe joint

(7) PERFORATIONS OR SCREEN:

Type of perforation or name of screen

From ft.	To ft.	Perf. per row	Rows per ft.	Size in. x in.
181	400	14		1/8 x 2 1/2

(8) CONSTRUCTION:

Was a surface sanitary seal provided? Yes ☒ No ☐ To what depth 50 ft.
Were any strata sealed against pollution? Yes ☐ No ☒ If yes, note depth of strata
From ft. to ft.
From ft. to ft.
Method of sealing

(9) WATER LEVELS:

Depth at which water was first found, if known ft.
Standing level before perforating, if known ft.
Standing level after perforating and developing ft.

(10) WELL TESTS:

Was pump test made? Yes ☒ No ☐ If yes, by whom? Ingram Equip.
Yield: gal./min. with ft. drawdown after hrs.
Temperature of water Was a chemical analysis made? Yes ☐ No ☐
Was electric log made of well? Yes ☐ No ☒ If yes, attach copy

(11) WELL LOG:

Total depth 420 ft. Depth of completed well 400 ft.
Formation: *Describe by color, character, size of material, and structure*

ft.	to ft.	
0ft.	to 50ft.	Cemented Conductor
50	70	Red. Sandy clay
70	86	Coarse sand & clay
86	103	Red sand
103	154	Sand & clay
154	172	Gravel & sand
172	196	Sand & clay
196	205	Clay, shale sand
205	216	Sand coarse
216	248	Sand gravel rock
248	263	Sand & clay
263	310	Coarse sand rock & gra
310	336	Clay & shale
336	350	Clay sand
350	370	Sand & gravel
370	378	Clay & sand
378	402	Rock gravel
402	418	Clay & shale

Work started 7-2 1973, Completed 7-9 1973

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Johnson Drilling Co.
(Person, firm, or corporation) (Typed or printed)

Address P.O. Box 1853
Bakersfield, Calif. 93303

[SIGNED] (Well Driller)

License No. 251601 Dated July 10, 1

SKETCH LOCATION OF WELL ON REVERSE SIDE

28179-950 9-68 50M TRIP

DWR 188 (REV. 9-68)

QUINTUPLICATE
RETAIN THIS COPY

WELL
5 E9W

WATER WELL DRILLERS REPORT

(Sections 7076, 7077, 7078, Water Code)

STATE OF CALIFORNIA

Do Not Fill In
No. 77746

State Well No.
Other Well No. E 9 W

(1) OWNER:
Name City of Exeter
Address Exeter, California

(2) LOCATION OF WELL:
County Tulare Owner's number, if any—
R. F. D. or Street No. Visalia Rd. & Waldo St.
(Northwest Section of Exeter).

(3) TYPE OF WORK (check):
New well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 11.

(4) PROPOSED USE (check):
Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(5) EQUIPMENT:
Rotary ☐
Cable ☒
Dug Well ☐

(6) CASING INSTALLED:
SINGLE ☒ DOUBLE ☐

From 0 ft. to 268 ft. 14 Diam. 8 Gage
*[redacted]
264 296 12 8
Liner installed in 14" Casing.

If gravel packed: Diameter of Bore / from ft. / to ft.

Type and size of shoe or well ring 5/8x4x14 2-1x4x12 1-Sp.Br.
Describe joint Plain End

(7) PERFORATIONS:
Type of perforator used Shop & Mills
Size of perforations 3/16 in., length, by 1/8 in. 1 1/2 in.

From	ft. to	ft.	Perf. per row	Rows per ft.
164	172		8	2
196	208		8	2
Liner Perf.				
272	292		10	4

(8) CONSTRUCTION:
Was a surface sanitary seal provided? ☒ Yes ☐ No To what depth 50 ft.
Were any strata sealed against pollution? ☒ Yes ☐ No If yes, note depth of strata 0-50
From 0 ft. to 50 ft.
Method of Sealing Grout

(9) WATER LEVELS:
Depth at which water was first found 78 ft.
Standing level before perforating 78 ft.
Standing level after perforating 78 ft.

(10) WELL TESTS:
Was a pump test made? ☒ Yes ☐ No If yes, by whom? Pomona Pump Co.
Yield: 1500 gal./min. with 28 ft. draw down after 8 hrs.
Temperature of water Was a chemical analysis made? ☐ Yes ☒ No
Was electric log made of well? ☐ Yes ☒ No

(11) WELL LOG:
Total depth 296 ft. Depth of completed well 296 ft.
Formation: Describe by color, character, size of material, and structure.

ft. to	ft.	Formation
0	3	Red Clay
3	5	Hard Pan
5	10	Red Clay
10	15	Coarse Sand
15	32	Red Clay
32	40	Coarse Sand
40	60	Red Clay
60	82	L.B.Clay
82	100	Fine Sand
100	108	L.B.Clay
108	122	Red Clay
122	132	Very Soft Sandy Clay
132	140	Red Clay
140	147	Red Coarse Sand
147	160	VerySoft Clay
160	164	Fine Sand
164	172	Coarse Sand & Sm. Rock
172	185	Red Clay
185	196	Coarse Sand
196	208	Coarse Sand & Sm. Rock
208	224	L.B.Clay
224	234	Tough Red Clay
234	237	Coarse Sand
237	243	Soft Red Clay
243	260	Tough Red Clay
260	272	Soft Brown Clay
272	292	Coarse Sand & Rocks (2"x2")
292	296	Tough Red Clay

Work started 1/27 19 64 Completed 2/7/

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Oscar L. Nation
(Person, firm, or corporation) (Typed or printed)
Address 26521 S. Mooney
Visalia, California

[SIGNED] Oscar L. Nation (Well Driller)
License No. 187734 Dated 4/22

87028 8-57 50M QUIN SPO
DWR 188 (REV

ORIGINAL
File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do not fill in
No. 054807

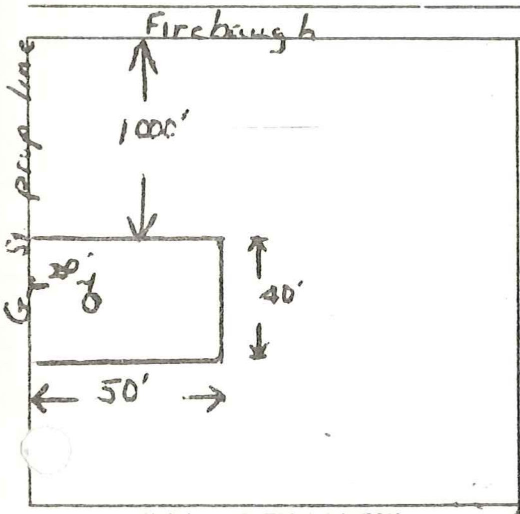
Notice of Intent No.________
Permit No. or Date________

WEll E10W

State Well No.________
Other Well No.________

(1) OWNER: Name City of Exeter
Address 137 No. F. st.
City Exeter Zip 93221

(2) LOCATION OF WELL (See instructions):
County Tulare Owner's Well Number____
Well address if different from above Firebaugh $ G St.
Township____ Range____ Section____
Distance from cities, roads, railroads, fences, etc. 1000 ft. S. of Firbaugh & G. St. E. side



WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well ☒ Deepening ☐
Reconstruction ☐
Reconditioning ☐
Horizontal Well ☐
Destruction ☐ (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic ☐
Irrigation ☐
Industrial ☐
Test Well ☐
Stock ☐
Municipal ☒
Other ☐

(5) EQUIPMENT:
Rotary ☐ Reverse ☒
Cable ☐ Air ☐
Other ☐ Bucket ☐

(6) GRAVEL PACK:
Yes ☒ No ☐ Size 5/16x16
Diameter of bore 26"
Packed from 0 to 425 ft.

(7) CASING INSTALLED:
Steel ☒ Plastic ☐ Concrete ☐

(8) PERFORATIONS:
Type of perforation or size of screen Louver

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	425	14	1/4	150	415	3/32x21/3

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 50 ft.
Were strata sealed against pollution? Yes ☐ No ☒ Interval____ ft.
Method of sealing cemented conductor

(10) WATER LEVELS:
Depth of first water, if known____ ft.
Standing level after well completion____ ft.

(11) WELL TESTS:
Was well test made? Yes ☐ No ☐ If yes, by whom?____
Type of test Pump ☐ Bailer ☐ Air lift ☐
Depth to water at start of test____ ft. At end of test____ ft
Discharge____ gal/min after____ hours Water temperature____
Chemical analysis made? Yes ☐ No ☐ If yes, by whom?____
Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 430 ft. Depth of completed well 425 ft.

from ft. to ft.	Formation (Describe by color, character, size or material)
0-3	top soil
3-25	clay
25-42	sand
42-54	clay
54-94	sand
94-105	clay
105-122	sand
122-125	clay
125-131	sand
131-158	clay
158-170	sand
170-180	clay
180-190	sand
190-206	clay
206-236	sand & rocks
236-279	clay
279-304	sand & rocks
304-349	clay
349-357	sand & rocks
357-380	clay
380-397	sand
397-409	clay
409-418	sand & rocks
418-430	clay

Work started Mar. 20 19 80 Completed Mar. 31 19 80

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

SIGNED Dean E. Grabow
(Well Driller)

NAME Grabow Well Drilling Inc.
(Person, firm, or corporation) (Typed or printed)
Address 12522-9th Ave.
City Hfd. Zip____
License No. 288489 Date of this report____

Well E11W

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

State No. 19S/26E-4R1

WELL DATA

BRANCH

Owner: City of Exeter
Address:
Tenant:
Address:

State No.:
Other No.: Well E11W

Type of Well: Hydrograph ☐ Key ☐ Index ☐ Semiannual ☐

No.:

Location: County: Tulare Basin:

Quad. No.: 407C

U.S.G.S. Quad.: EXETER, CA

¼ ¼ Section 4, Twp. 19S, Rge. 26E, MD / SB / H Base & Meridian

Description: 300ft. North of Visalia Road And 50 ft. WEST OF BELMONT AVE.

Reference Point description:

which is ___ ft. above/below land surface. Ground Elevation ___ ft.

Reference Point Elev. ___ ft. Determined from ___ Depth 425 ft.

Well: Use Municipal Water Condition

Casing, size 14 in., perforations

Measurements By: DWR ☐ USGS ☐ USBR ☐ County ☐ Irr. Dist. ☐ Water Dist. ☐ Cons. Dist. ☐

Chief Aquifer: Name ___ Depth to Top Aq. ___ Depth to Bot. Aq. ___

Type of Material ___ Perm. Rating ___ Thickness ___

Gravel Packed? Yes ☒ No ☐ Depth to Top Gr. ___ Depth to Bot. Gr. ___

Supp. Aquifer ___ Depth to Top Aq. ___ Depth to Bot. Aq. ___

Driller: Grabow Well Drilling, Inc.

Date drilled: May, 1987 Log, filed: YES, # 164413 open (1) ___ confidential (2) ___

Equipment: Pump, type ___ make ___

Serial No. ___ Size of discharge pipe ___ in.

Power, Kind ___ Make ___

H. P. ___ Motor Serial No. ___

Elec. Meter No. ___ Transformer No. ___

Yield ___ G.P.M. Pumping level ___ ft.

Water Analysis: Min. (1) ___ San. (2) ___ H.M. (3) ___

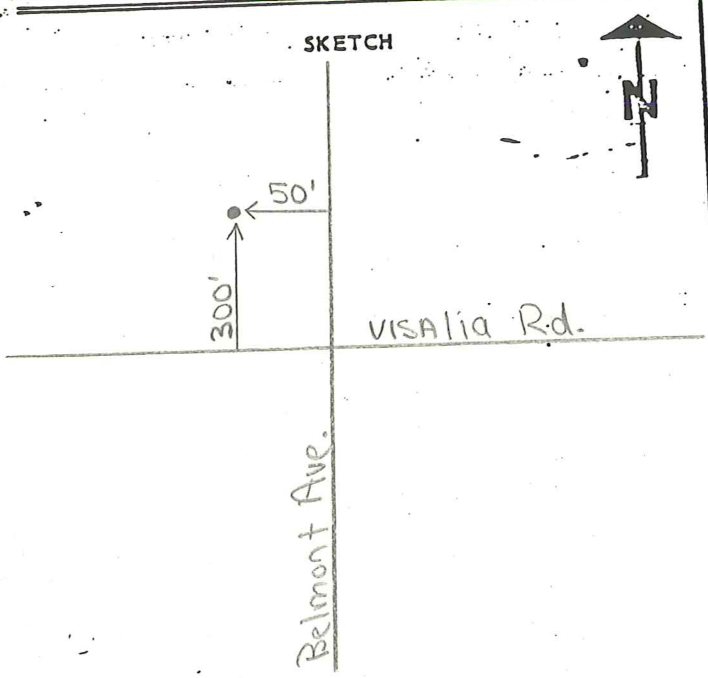
Water Levels available: Yes (1) ___ No ___

Period of Record: Begin ___ End ___

Collecting Agency:

Prod. Rec. (1) ___ Pump Test (2) ___ Yield (3) ___

SKETCH



REMARKS

Longitude 119° 09' 15"

Latitude 36° 17' 55"

Recorded by:

Date 4·14·88

ORIGINAL

File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do not fill in

No. 164413

State Well No. 19/26-10

Other Well No.

N[illegible] of Intent No.

Local Permit No. or Date

WELL E11W

(1) OWNER: Name City of Exeter

Address 137 N. F St.

City Exeter Zip 93221

(2) LOCATION OF WELL (See instructions):

County Tulare Owner's Well Number

Well address if different from above Belmont N. of Visalia Rd.

Township Range Section

Distance from cities, roads, railroads, fences, etc. 300ft N. of Visalia Rd. on Belmont 50ft

WELL LOCATION SKETCH

(3) TYPE OF WORK:

New Well ☒ Deepening ☐

Reconstruction ☐

Reconditioning ☐

Horizontal Well ☐

Destruction ☐ (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:

Domestic ☐

Irrigation ☐

Industrial ☐

Test Well ☐

Stock ☐

Municipal ☒

Other ☐

(5) EQUIPMENT:

Rotary ☐ Reverse ☒

Cable ☐ Air ☐

Other ☐ Bucket ☐

(6) GRAVEL PACK:

Yes ☒ No ☐ Size SN-16

Diameter of bore 26

Packed from 0 to 425 ft.

(7) CASING INSTALLED:

Steel ☒ Plastic ☐ Concrete ☐

From ft.	To ft.	Dia. in.	Gage or Wall
0	425	14 ID	1/4

(8) PERFORATIONS:

Type of perforation or size of screen Louver

From ft.	To ft.	Slot size
150	225	.060 Stan-Perf.
225	275	.060 ful Flo
275	405	.060 Stan-Perf.

(9) WELL SEAL:

Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 92 ft.

Were strata sealed against pollution? Yes ☐ No ☒ Interval ft.

Method of sealing cemented conductor casing

(10) WATER LEVELS:

Depth of first water, if known ft.

Standing level after well completion ft.

(11) WELL TESTS:

Was well test made? Yes ☐ No ☐ If yes, by whom?

Type of test Pump ☐ Bailer ☐ Air lift ☐

Depth to water at start of test ft. At end of test ft

D[illegible]arge gal/min after hours Water temperature

C[illegible]ical analysis made? Yes ☐ No ☐ If yes, by whom?

Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 430 ft. Depth of completed well 425 ft.

from ft. to ft.	Formation (Describe by color, character, size or material)
0-2	top soil
2-6	hard pan
6-9	clay
9-15	sand
15-20	clay
20-38	sand
38-45	clay
45-52	sand
52-68	clay
68-90	sand
90-100	clay
100-105	sand
105-160	clay
160-165	sand
165-205	clay
205-216	sand
216-225	clay
225-245	sand
245-252	clay
252-265	sand
265-267	clay & rocks
267-272	sand & gravel
272-280	clay
280-293	rock & clay
293-305	clay
305-316	sand
316-330	clay
330-333	rocks
333-352	clay
352-355	sand
355-384	clay
384-390	sand
390-407	clay w/sand streaks
407-430	clay

CONFIDENTIAL NOT FOR PUBLIC USE WATER CODE SEC 13752

Work started May 20 19 87 Completed May 22 19

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

SIGNED [signature] (Well Driller)

NAME Grabow Well Drilling Inc. (Person, firm, or corporation) (Typed or printed)

Address 12522-9th Ave.

City Hfd. Zip 932

License No. 288489 Date of this report 5-87

DWR 188 (REV. 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

DUPLICATE
Driller's Copy
Page of
Owner's Well No.
Date Work Began 6-3-02, Ended 6-12-02
Local Permit Agency Tulare
Permit No. 57141 Permit Date 5-2-02

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet
No. 768888

Well #12

DWR USE ONLY — DO NOT FILL IN
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) XX VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD ROTARY FLUID NATURAL

DEPTH FROM SURFACE Ft. to Ft.	DESCRIPTION Describe material, grain size, color, etc.
0 - 30	conductor
30 - 75	clay
75 - 120	sand
120 - 130	clay
130 - 135	sand
135 - 140	clay
140 - 150	clay
150 - 155	sand
155 - 160	clay
160 - 180	clay &lt.sand
180 - 190	clay
190 - 193	sand
193 - 220	clay
220 - 240	clay &lt.sand
240 - 260	brown clay
260 - 280	clay
280 - 300	brown clay
300 - 310	sandy clay sand
310 - 320	sandy clay sand
320 - 340	sandy brown clay
340 - 390	brown clay
390 - 395	sand
395 - 400	gray clay
400 - 415	clay
415 - 420	sand
420 - 440	clay & sand
440 - 460	gravel & sand
460 - 540	clay
540 - 560	clay & lt sand
560 - 565	sand
565 - 580	cobble stone
580 - 600	sticky br. clay
600 - 620	br. clay

TOTAL DEPTH OF BORING 600 (Feet)
TOTAL DEPTH OF COMPLETED WELL 615 (Feet)

WELL OWNER

Name City of Exter: Atkinson Enterprises
Mailing Address 2302 N. Kaweah
Exter, CA 93221
CITY STATE ZIP

WELL LOCATION

Address
City Exter
County Tulare
APN Book 138 Page 021 Parcel 01
Township 19s Range 26e Section 3
Latitude ___ NORTH DEG. MIN. SEC. Longitude ___ WEST DEG. MIN. SEC.

LOCATION SKETCH

NORTH
WEST EAST
SOUTH

Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

XX NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG")

PLANNED USES (✓)

WATER SUPPLY
___ Domestic ___ Public
___ Irrigation ___ Industrial
MONITORING ___
TEST WELL ___
CATHODIC PROTECTION ___
HEAT EXCHANGE ___
DIRECT PUSH ___
INJECTION ___
VAPOR EXTRACTION ___
SPARGING ___
REMEDIATION ___
OTHER (SPECIFY) ___

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 80 (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 80 (Ft.) & DATE MEASURED
ESTIMATED YIELD * ___ (GPM) & TEST TYPE ___
TEST LENGTH ___ (Hrs.) TOTAL DRAWDOWN ___ (Ft.)
* May not be representative of a well's long-term yield.

CASING (S)

DEPTH FROM SURFACE Ft. to Ft.	BORE-HOLE DIA. (Inches)	BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0 - 30	48			x		steel	32	3/8	
30 - 320	28	x				copper/b	16	5/16	
320 - 600	28		x			copper/b	16	5/16	.050
600 - 615	28	x				copper/b	16	5/16	
0 - 305					X	steel	3"	sch40	

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft. to Ft.	CE-MENT (✓)	BEN-TONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0 - 295	x			
295 - 300		x		
300 - 620			x	8x20C/Silica

ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analyses
___ Other
ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.
NAME Arthur & Orum Well Drilling Inc.
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
ADDRESS 3262 E. Conejo Fresno, CA 93725
CITY STATE ZIP
Signed ___ WELL DRILLER/AUTHORIZED REPRESENTATIVE 6-11-02 DATE SIGNED C-57 LICENSE NUMBER 361319

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

Well E13W

ORIGINAL
File with DWR

Page 1 of ___

Owner's Well No. 13

Date Work Began 7-24-06, Ended 8-18-06

Local Permit Agency Tulare County

Permit No. 06-0257 Permit Date 7-6-06

STATE OF CALIFORNIA

WELL COMPLETION REPORT

Refer to Instruction Pamphlet

No. 0943180

DWR USE ONLY — DO NOT FILL IN

STATE WELL NO./STATION NO.

LATITUDE LONGITUDE

APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DRILLING METHOD Reverse Rotary FLUID polymers

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	50	Sandy clay
50	60	sand
60	110	Clayey sand
110	230	Clay little sand
230	290	Coarse sand clebbles little clay
290	390	Clay little sand
390	420	Sandy clay
420	480	Clay
480	520	Clayey sand
520	560	Sand cobbles little clay
560	600	Clay

NOTE: 2" Entrance box @ 225Ft For sounding tube

TOTAL DEPTH OF BORING 600 (Feet)

TOTAL DEPTH OF COMPLETED WELL 580 (Feet)

WELL OWNER

Name City of Exeter

Mailing Address 137 North F St.

Exeter Ca 93221

CITY STATE ZIP

WELL LOCATION

Address NE corner Belmont / Glaze Ave

City Exeter

County Tulare

APN Book 135 Page 320 Parcel 024

Township 19 Range 26 Section 10

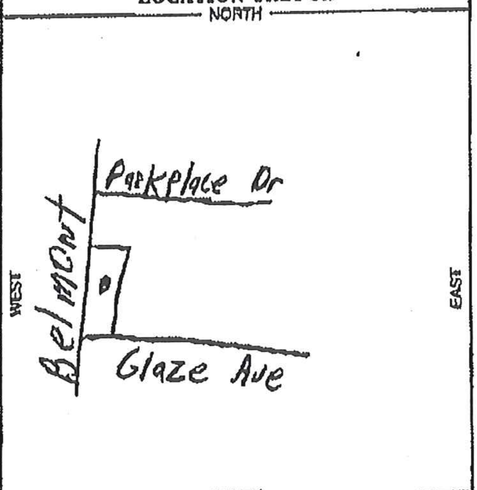
Lat 36 16 60 N Long 119 9 139 W

DEG. MIN. SEC. DEG. MIN. SEC.

LOCATION SKETCH

NORTH

WEST



EAST

SOUTH

Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

✓ NEW WELL

MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)

___ DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG")

USES (✓)

WATER SUPPLY
___ Domestic ✓ Public
___ Irrigation ___ Industrial

MONITORING ___
TEST WELL ___
CATHODIC PROTECTION ___
HEAT EXCHANGE ___
DIRECT PUSH ___
INJECTION ___
VAPOR EXTRACTION ___
SPARGING ___
REMEDIATION ___
OTHER (SPECIFY) ___

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 78 (Ft.) BELOW SURFACE

DEPTH OF STATIC WATER LEVEL 78 (Ft.) & DATE MEASURED 8-18-06

ESTIMATED YIELD * 1500 (GPM) & TEST TYPE Constant Rate

TEST LENGTH 12 (Hrs.) TOTAL DRAWDOWN 88 (Ft.)

** May not be representative of a well's long-term yield.*

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	50	42			✓		ASTM139 Gr B	31 5/16	.312	
0	580	28	✓				HSLA	16	.312	
230	280	28		✓			HSLA FF	16	.312	.050
360	440	28		✓			HSLA FF	16	.312	.050
480	560	28		✓			HSLA FF	16	.312	.050
0	200					✓	Sch 40	3	.250	

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	CE-MENT (✓)	BEN-TONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)

ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analyses
___ Other ___

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME Zim Industries Inc.
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

4545 E. Lincoln Ave Fresno Ca 93725
ADDRESS CITY STATE ZIP

Signed Robert A Zimmerman 8-30-06 440537

ORIGINAL
File with DWR

Page 1 of 1
Owner's Well No. 14
Date Work Began 11-6-06, Ended ____
Local Permit Agency Tulare County
Permit No. 06-0402 Permit Date 10-25-06

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet
No. 0943196

DWR USE ONLY — DO NOT FILL IN
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD Reverse Rotary FLUID Polymerc

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	40	Clayey sand
40	50	clay
50	170	Clayey sand
170	200	Clay
200	240	Sand & gravel
240	330	Sandy Clay
330	360	Clayey Sand
360	400	Sandy Clay
400	410	Clayey Sand
410	450	Sandy clay
450	500	Clayey Sand
500	565	Sandy Clay

TOTAL DEPTH OF BORING 565 (Feet)
TOTAL DEPTH OF COMPLETED WELL 555 (Feet)

WELL OWNER

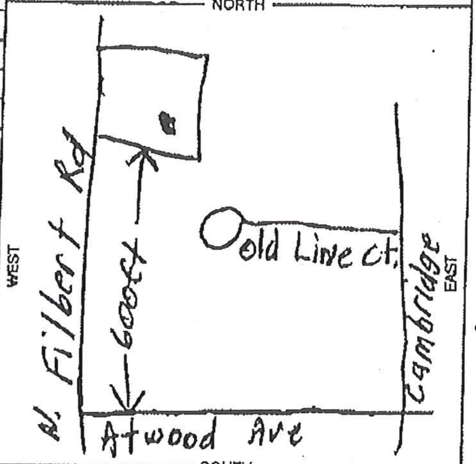
Name City of Exeter
Mailing Address 137 N. F Street
Exeter CITY Ca STATE 93221 ZIP

WELL LOCATION

Address N. Filbert Rd / North of Atwood Ave
City Exeter
County Tulare
APN Book 139 Page 010 Parcel 85
Township 19S Range 26E Section 3
Lat 36 18 22.2 N (DEG. MIN. SEC.) Long 119 08 35.4 W (DEG. MIN. SEC.)

LOCATION SKETCH

NORTH



WEST EAST SOUTH

Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

✓ NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG")

USES (✓)

WATER SUPPLY
___ Domestic ✓ Public
___ Irrigation ___ Industrial
MONITORING ___
TEST WELL ___
CATHODIC PROTECTION ___
HEAT EXCHANGE ___
DIRECT PUSH ___
INJECTION ___
VAPOR EXTRACTION ___
SPARGING ___
REMEDIATION ___
OTHER (SPECIFY) ___

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER NA (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 75 (Ft.) & DATE MEASURED 12-20-06
ESTIMATED YIELD * 500 (GPM) & TEST TYPE Constant Rate
TEST LENGTH 10 (Hrs.) TOTAL DRAWDOWN 206 (Ft.)
* *May not be representative of a well's long-term yield.*

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	50	42			✓		ASTM1396	32	.312	
0	320	29	✓				HSLA	16	.312	
320	535	29		✓			HSLA	16	.312 FF	.050
535	555	29	✓				HSLA	16	.312	
0	315	29				✓	Sch40 steel	3	.219	gravel tube
0	315	29					sch40 steel	2	.1[illegible]	Sound tube

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	CE-MENT (✓)	BEN-TONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	305	✓			1sk grout
305	310		✓		Hole Plug
310	565			✓	6x16 Colsil

ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analyses
___ Other
ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME Zim Industries Inc.
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

ADDRESS 4545 E. Lincoln Ave CITY Fresno STATE Ca ZIP 93725

Signed Robert A. Zimmer
C-57 LICENSED WATER WELL CONTRACTOR
DATE SIGNED 1-2-07
C-57 LICENSE NUMBER 440537

DWR 188 REV. 05/03

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

OSP 03 78836

APPENDIX D

WELL PUMPING RECORDS BY YEAR

City of Exeter
2010 Well Pumping Record

Month	E-9W	E-11W	E-12W	E-13W	E-14W	Total Gallons
JANUARY	0	9,422,400	0	25,217,000	0	34,639,400
FEBRUARY	0	8,730,300	0	22,186,000	0	30,916,300
MARCH	135,500	16,036,900	0	26,519,000	0	42,691,400
APRIL	308,100	20,316,000	0	27,965,000	0	48,589,100
MAY	8,427,900	29,767,100	0	29,420,000	1,303,000	68,918,000
JUNE	13,163,500	31,205,300	18,000	48,156,000	5,093,000	97,635,800
JULY	15,051,600	33,001,400	2,970,000	49,157,000	6,759,000	106,939,000
AUGUST	13,047,200	31,569,900	2,111,000	49,325,000	6,809,000	102,862,100
SEPT	8,098,000	27,909,500	1,104,000	46,436,000	3,036,000	86,583,500
OCTOBER	9,562,600	19,024,300	1,046,000	27,599,000	1,508,000	58,739,900
NOVEMBER	952,200	11,767,800	52,000	30,432,000	264,000	43,468,000
DECEMBER	1,307,400	19,778,700	0	13,986,000	13,000	35,085,100
					TOTAL	**757,067,600**

City of Exeter
2011 Well Pumping Record

Month	E-9W	E-11W	E-12W	E-13W	E-14W	Total Gallons
JANUARY	1,316,400	20,637,800	0	10,581,000	0	32,535,200
FEBRUARY	6,500	6,665,900	0	25,285,000	0	31,957,400
MARCH	0	7,619,700	0	29,202,000		36,821,700
APRIL	230,700	14,337,000	0	35,786,000	0	50,353,700
MAY	5,867,300	30,687,600	0	38,816,000	0	75,370,900
JUNE	11,673,300	33,898,000	0	37,631,000	3,000	83,205,300
JULY	17,601,600	34,565,700	46,294,000	2,032,000	4,975,000	105,468,300
AUGUST	14,774,100	33,858,100	2,095,000	43,159,000	7,608,000	101,494,200
SEPT	8,580,200	28,192,200	1,184,000	44,712,000	4,292,000	86,960,400
OCTOBER	7,467,100	31,723,400	562,000	18,448,000	2,272,000	60,472,500
NOVEMBER	405,200	24,022,000	0	15,726,000	52,000	40,205,200
DECEMBER	2,771,900	21,023,700	0	14,320,000	0	38,115,600
					TOTAL	**742,960,400**

City of Exeter
2012 Well Pumping Record

Month	E-6 W	E-9W	E-11W	E-12W	E-13W	E-14W	Total Gallons
JANUARY	0	1,443,600	29,199,700	0	7,456,000	0	38,099,300
FEBRUARY	0	4,100	28,966,800	3,000	6,588,000	8,000	35,569,900
MARCH	0	0	31,808,800	0	13,292,000	0	45,100,800
APRIL	0	0	31,997,600	0	13,808,000	0	45,805,600
MAY	0	985,300	34,776,700	0	37,988,000	5,233,000	78,983,000
JUNE	0	12,202,500	33,467,000	762,000	45,314,000	7,800,000	99,545,500
JULY	1,623,000	18,053,200	35,236,300	2,034,000	45,921,000	5,574,000	108,441,500
AUGUST	2,331,000	16,653,800	33,402,500	1,705,000	44,011,000	5,108,000	103,211,300
SEPT	297,000	13,842,700	31,769,700	1,045,000	39,267,000	3,412,000	89,633,400
OCTOBER	0	4,472,300	29,700,000	357,000	21,757,000	9,310,000	65,596,300
NOVEMBER	0	181,900	26,014,400	0	5,468,000	11,429,000	43,093,300
DECEMBER	0	0	22,515,900	0	2,154,000	9,022,000	33,691,900
						TOTAL	**786,771,800**

City of Exeter
2013 Well Pumping Record

Month	E-6 W	E-9W	E-11W	E-12W	E-13W	E-14W	Total Gallons
JANUARY	0	84,100	22,360,300	0	9,220,000	0	31,664,400
FEBRUARY	0	2,453,800	16,718,200	823,000	8,452,000	3,735,000	32,182,000
MARCH	0	0	33,462,300	0	4,763,000	7,546,000	45,771,300
APRIL	0	330,000	43,005,500	20,000	32,996,000	1,797,000	78,148,500
MAY	0	2,053,500	33,684,500	274,000	41,908,000	5,381,000	83,301,000
JUNE	0	6,123,000	30,976,600	1,271,000	47,009,000	11,219,000	96,598,600
JULY	277,667	7,044,100	31,331,500	1,409,000	47,907,000	12,615,000	100,584,267
AUGUST	1,488,142	4,908,500	31,928,800	1,059,000	45,864,000	11,295,000	96,543,442
SEPT	259,015	2,832,700	31,967,800	479,000	40,905,000	7,982,000	84,425,515
OCTOBER	0	536,100	32,953,100	0	32,382,000	1,595,000	67,466,200
NOVEMBER	0	2,700	31,784,200	2,000	17,032,000	69,000	48,889,900
DECEMBER	0	5,300	30,580,900	0	6,844,200	0	37,430,400
						TOTAL	**803,005,524**

City of Exeter

2014 Well Pumping Record

Month	E-6 W	E-9W	E-11W	E-12W	E-13W	E-14W	Total Gallons
JANUARY	0	1,367,000	22,920,400	0	16,582,000	62,000	40,931,400
FEBRUARY	0	1,800	28,461,600	3,000	6,456,000	44,000	34,966,400
MARCH	0	98,200	31,389,000	26,000	12,227,000	165,000	43,905,200
APRIL	0	0	31,572,600	0	23,847,000	433,000	55,852,600
MAY	0	1,187,400	32,548,100	122,000	38,265,000	4,379,000	76,501,500
JUNE	2,033,581	4,447,200	30,986,500	800,000	43,063,000	8,411,000	89,741,281
JULY	4,837,585	8,462,400	31,106,600	838,000	43,303,000	4,943,000	93,490,585
AUGUST	1,353,885	8,526,300	30,507,100	509,000	40,951,000	3,944,000	85,791,285
SEPT	73,157	5,251,300	28,981,700	408,000	34,903,000	2,397,000	72,014,157
OCTOBER	0	2,510,800	29,236,800	52,000	27,473,000	665,000	59,937,600
NOVEMBER	0	4,515,500	16,872,600	2,496,000	7,972,000	7,486,000	39,342,100
DECEMBER	0	893,700	25,620,100	476,000	3,944,000	1,449,000	32,382,800
						TOTAL	**724,856,908**

City of Exeter
2015 Well Pumping Record

Month	E-6 W	E-9W	E-11W	E-12W	E-13W	E-14W	Total Gallons
JANUARY	0	7,727,200	1,011,800	5,444,000	3,656,000	15,643,000	33,482,000
FEBRUARY	0	5,264,800	2,865,800	3,539,000	8,813,000	9,740,000	30,222,600
MARCH	0	0	7,004,600	2,343,000	34,654,000	2,000	44,003,600
APRIL	0	0	22,260,600	5,578,000	12,876,000	9,187,000	49,901,600
MAY	0	0	29,478,800	6,492,000	10,172,000	12,826,000	58,968,800
JUNE	0	0	27,170,300	3,093,000	27,244,000	6,984,000	64,491,300
JULY	1,409,435	0	28,002,000	1,266,000	30,416,000	4,680,000	65,773,435
AUGUST	2,028,620	2,178,800	21,824,300	1,409,000	32,563,000	4,536,000	64,539,720
SEPT	5,907,790	9,093,000	0	1,799,000	38,932,000	5,121,000	60,852,790
OCTOBER	12,016,749	613,800	0	406,000	33,434,000	4,041,000	50,511,549
NOVEMBER	9,542,498	276,500	0	4,000	27,688,000	399,000	37,909,998
DECEMBER	8,694,912	0	0	5,000	25,286,000	14,000	33,999,912
						TOTAL	**594,657,304**

City of Exeter
2016 Well Pumping Record

Month	E-6 W	E-9W	E-11W	E-12W	E-13W	E-14W	Total Gallons
JANUARY	8,514,702	0	0	14,000	23,183,000	30,000	31,741,702
FEBRUARY	8,023,678	22,000	0	16,000	23,312,000	62,000	31,435,678
MARCH	3,697,918	1,593,400	16,494,400	20,000	11,789,000	75,000	33,669,718
APRIL	366,946	1,073,300	28,936,200	13,000	14,696,000	743,000	45,828,446
MAY	2,632,744	16,790,200	19,014,800	10,000	21,996,000	1,970,000	62,413,744
JUNE	3,484,911	14,495,400	27,585,300	11,000	21,369,000	2,378,000	69,323,611
JULY	2,614,297	17,779,100	29,584,200	307,000	23,249,000	1,076,000	74,609,597
AUGUST	0	14,446,300	29,921,700	1,495,000	24,780,000	3,863,000	74,506,000
SEPT	0	15,108,800	28,432,000	1,385,000	19,397,000	2,622,000	66,944,800
OCTOBER	0	14,252,600	29,384,400	676,000	12,984,000	1,515,000	58,812,000
NOVEMBER	0	4,294,100	25,674,300	176,000	12,147,000	497,000	42,788,400
DECEMBER	0	7,736,600	17,458,800	9,000	8,493,000	15,000	33,712,400
						TOTAL	**625,786,096**

City of Exeter

2017 Well Pumping Record

Month	E-9W	E-11W	E-12W	E-13W	E-14W	Total Gallons
JANUARY	19,980,600	10,400	10,000	12,070,000	10,000	32,081,000
FEBRUARY	17,774,300	17,600	7,000	9,648,000	8,000	27,454,900
MARCH	10,824,600	15,281,300	8,000	5,942,000	9,000	32,064,900
APRIL	8,188,500	27,792,400	36,000	3,935,000	14,000	39,965,900
MAY	18,008,600	29,939,200	745,000	16,202,000	1,431,000	66,325,800
JUNE	19,046,200	28,737,300	1,824,000	24,231,000	1,935,000	53,965,600
JULY	19,270,600	29,786,500	2,449,000	27,598,900	3,460,300	82,565,300
AUGUST	15,375,400	26,487,200	1,346,000	36,278,000	3,976,000	83,462,600
SEPT	8,404,900	20,242,300	4,000	42,369,000	2,784,000	73,804,200
OCTOBER	3,909,300	27,734,100	0	35,542,000	953,000	68,138,400
NOVEMBER	14,252,600	29,384,400	676,000	12,984,000	1,515,000	58,812,000
DECEMBER	18,867	11,243,400	1,000	0	7,690,000	18,953,267
					TOTAL	**637,593,867**

APPENDIX E

METERED WATER USAGE RECORDS BY YEAR

180276 - Exeter Water Master Plan

Metered Water Consumption

Month	2014	2015	2016	2017	2018
Jan	34,004,275	29,957,201	26,531,587	26,664,740	30,403,384
Feb	32,406,817	25,756,130	25,772,972	26,089,331	69,715,589
Mar	32,103,310	21,676,400	25,703,418	24,513,784	
Apr	44,520,158	37,956,622	34,832,353	30,991,458	39,453,340
May	48,494,161	41,949,844	45,531,591	46,272,716	57,475,005
Jun	68,236,084	94,301,260	59,407,387	65,518,142	54,542,484
Jul	73,832,254	51,350,306	66,742,957	72,469,954	66,591,933
Aug	66,372,492	56,832,548	66,911,553	74,979,601	71,552,834
Sep	69,537,156	60,111,701	64,261,923	81,750,795	64,740,437
Oct	51,565,947	39,614,882	51,750,641	59,610,656	53,590,961
Nov	40,207,907	37,535,424	39,761,672	38,856,230	51,459,806
Dec	30,114,823	28,656,967	32,803,763	35,046,588	31,972,042
Total	**591,395,384**	**525,699,285**	**540,011,819**	**582,763,994**	**591,497,815**

APPENDIX F

2016 AND 2017 TOOLEVILLE CONSUMER CONFIDENCE REPORTS

2016 Consumer Confidence Report

Water System Name: **Tooleville Mutual Non-Profit Water Association, Inc.** Report Date: July 1 2017

We test the drinking water quality for many constituents as required by state and federal regulations. This report shows the results of our monitoring for the period of January 1 - December 31, 2016 and may include earlier monitoring data.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo ó hable con alguien que lo entienda bien.

Type of water source(s) in use: Groundwater- Well Waters

Name & general location of source(s): Morgan Well, East end of Morgan St. and Alfred Well, North of Alfred St

Drinking Water Source Assessment information:

Completed by the Tulare County Department of Health Services. A source water assessment was conducted for the water supply well in December 2002. The activities to which the Tooleville water system is most vulnerable include a nitrate plume, historic leaking fuel tanks, sewer systems, and agricultural activity and drainage. The property is within three pesticide management zones: bromacil, diuron and simizine. The well sites are surrounded by citrus groves, pasture land, and residential development. The leaking fuel tanks (in the 10 year time of travel zone) have been removed and remediation has been completed on the site. A copy of the complete assessment may be viewed at the office of Environmental Health Services, 5957 S. Mooney Blvd., Visalia, CA 93277.

Time and place of regularly scheduled board meetings for public participation: 4th Tuesdays of February, April, June, August, October, December at the Water Company Trailer on Alfred (6:00pm); Please call to confirm.

For more information, contact: Ruben Salazar Phone: (559) 909-2098

TERMS USED IN THIS REPORT

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (USEPA).

Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Primary Drinking Water Standards (PDWS): MCLs and MRDLs for contaminants that affect health

Secondary Drinking Water Standards (SDWS): MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the MCL levels.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Regulatory Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

Variances and Exemptions: State Board permission to exceed an MCL or not comply with a treatment technique under certain conditions.

Level 1 Assessment: A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

Level 2 Assessment: A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an *E. coli* MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

ND: not detectable at testing limit

ppm: parts per million or milligrams per liter (mg/L)

ppb: parts per billion or micrograms per liter (μg/L)

ppt: parts per trillion or nanograms per liter (ng/L)

along with their monitoring and reporting requirements, and water treatment requirements.	**ppq**: parts per quadrillion or picogram per liter (pg/L) **pCi/L**: picocuries per liter (a measure of radiation)

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- *Microbial contaminants*, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants*, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- *Pesticides and herbicides*, that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- *Radioactive contaminants*, that can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the USEPA and the State Water Resources Control Board (State Board) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. State Board regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

Tables 1, 2, 3, 4, 5, and 6 list all of the drinking water contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The State Board allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, are more than one year old. Any violation of an AL, MCL, MRDL, or TT is asterisked. Additional information regarding the violation is provided later in this report.

TABLE 1 – SAMPLING RESULTS SHOWING THE DETECTION OF COLIFORM BACTERIA

Microbiological Contaminants (complete if bacteria detected)	Highest No. of Detections	No. of months in violation	MCL	MCLG	Typical Source of Bacteria
Total Coliform Bacteria (state Total Coliform Rule)	1 (In a mo.)	1	1 positive monthly sample	0	Naturally present in the environment
Fecal Coliform or *E. coli* (state Total Coliform Rule)	(In the year)	1	A routine sample and a repeat sample are total coliform positive, and one of these is also fecal coliform or *E. coli* positive		Human and animal fecal waste
E. coli (federal Revised Total Coliform Rule)	(from 4/1/16-12/31/16)		(a)	0	Human and animal fecal waste

(a) Routine and repeat samples are total coliform-positive and either is *E. coli*-positive or system fails to take repeat samples following *E. coli*-positive routine sample or system fails to analyze total coliform-positive repeat sample for *E. coli*.

TABLE 2 – SAMPLING RESULTS SHOWING THE DETECTION OF LEAD AND COPPER

Lead and Copper (complete if lead or copper detected in the last sample set)	Sample Date	No. of samples collected	90th percentile level detected	No. sites exceeding AL	AL	PHG	Typical Source of Contaminant
Lead (ppb)	0				15	0.2	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits

Copper (ppm)	2013/07/16	1			1.3	0.3	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

TABLE 3 – SAMPLING RESULTS FOR SODIUM AND HARDNESS

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Sodium (ppm)	7/16/13	145	90-200	none	none	Salt present in the water and is generally naturally occurring
Hardness (ppm)	7/16/13	430	300-560	none	none	Sum of polyvalent cations present in the water, generally magnesium and calcium, and are usually naturally occurring

TABLE 4 – DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL [MRDL]	PHG (MCLG) [MRDLG]	Typical Source of Contaminant
Nitrate, ppm	1/27/14, 5/13/14, 8/27/14, 10/29/14, 12/12/14, 11/6/15, 12/9/15, 4/14/16,9/9/16,12/16/16	8.6	5.7-8.7	10	10	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Gross Alpha, pCi/L	1/27/14, 5/13/14	1.93	0 - 4.97	15.00	NA	Erosion of Natural deposits
Arsenic, ppb	7/16/13	ND	ND	10	NA	Erosion of natural deposits; runoff from orchards
***Hexavalent Chromium**, ppb	10/29/14, 12/12/14, 12/22/14, 7/17/15, 12/9/15, ,9/9/16,12/16/16	**12.3**	12-13	**10**	0.02	Discharge from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile manufacturing facilities; erosion of natural deposits.
Total Trihalomethanes, ppb	8/6/14, 9/9/15, 6/23/16	2.6	2.6	80	N/A	By-product of drinking water disinfection
Total Haloacetic Acids (HAA), ppb	8/6/14, 9/9/15, 6/23/16	ND	ND	60	N/A	By-product of drinking water disinfection
Flouride, ppm	7/16/13	0.23	0.21 to 0.24	2.00	N/A	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories

Barium, ppm	7/16/13	0.09	0.051 to 0.13	1	N/A	Discharges of oil drilling wastes and from metal refineries; erosion of natural deposits
1,2-Dichlorobenzenem, ppb	7/22/09	96	96	600	600	Discharge from industrial chemical factories. Some people who drink water containing 1,2-dichlorobenzene in excess of the MCL over many years may experience liver, kidney, or circulatory system problems.
Selenium, ppb	7/16/13	6	2.9 to 9	50	(50)	Discharge from petroleum, glass, and metal refineries; erosion of natural deposits; discharge from mines and chemical manufacturers; runoff from livestock lots (feed additive). Selenium is an essential nutrient. However, some people who drink water-containing selenium in excess of the MCL over many years may experience hair or fingernail losses, numbness in fingers or toes, or circulation system problems.

TABLE 5 – DETECTION OF CONTAMINANTS WITH A SECONDARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Chromium, Total (ppb)	7/16/13	12.5	12 to 13	50	(100)	Discharge from steel and pulp mills and chrome plating; erosion of natural deposits
Specific Conductance (micromhos)	7/22/09	1570	940 to 2200	1600	NA	Substances that form ions when in water; seawater influence
Sulfate (mg/L)	7/22/09	40	36 to 44	500	NA	Runoff/leaching from natural deposits; industrial wastes
Chloride	7/22/09	380	160 to 600	500	NA	Runoff/leaching from natural deposits; seawater influence
Total Dissolved Solids	7/22/09	825	490 to 1200	1000	NA	Runoff/leaching from natural deposits

TABLE 6 – DETECTION OF UNREGULATED CONTAMINANTS

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	Notification Level	Health Effects Language

Trichloropropane (1,2,3-TCP) ppt	9/6/11	ND	ND	5 ppt	Some people who use water containing 1,2,3-trichloropropane in excess of the notification level over many years may have an increased risk of getting cancer, based on studies in laboratory animals.

Additional General Information on Drinking Water

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).
Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Lead-Specific Language for Community Water Systems: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. TOOLEVILLE MUTUAL NON-PROFIT WATER ASSOCIATION, INC is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. [Optional: If you do so, you may wish to collect the flushed water and reuse it for another beneficial purpose, such as watering plants.] If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4701) or at http://www.epa.gov/lead.

Nitrates above the MCL

A NOTE regarding NITRATES in our water: Historically, Tooleville water has been high in nitrates (as nitrogen) above 5 mg/L, but below 10 mg/L: For this reason, the water system in pursuing an alternative source of drinking water. However, due to the natural movement or groundwater, nitrate levels in a well can fluctuate. During 2015, all the water samples taken from our wells met the State and Federal standard for Nitrate.

Nitrate in drinking water at levels above 10 mg/L is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 10 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.
Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity.

Hexavalent Chromium above the MCL

What is Hexavalent Chromium and why is there a public health concern? Chromium is a heavy metal that occurs throughout the environment. The Trivalent form is a required nutrient and has very low toxicity. The hexavalent form, also commonly known as Chromium-6, is more toxic and has been known to cause cancer when inhaled. In recent scientific studies in laboratory animals, Hexavalent Chromium has also been linked to cancer when ingested.
If my drinking water has Hexavalent Chromium above the PHG, is there a risk to my health? A drinking water sample with a detection of Hexavalent Chromium above the PHG of 0.02 ppb does not necessarily represent a public health concern. The PHG is based on a cancer risk of no more than one case of cancer per one million people. The PHG tries to

account for persons at three different stages in their lives by including protection factors to account for age and by applying higher rates of water consumption in their calculation. The PHG represents the level of Hexavalent Chromium at which no adverse health effects would be anticipated over an entire lifetime of exposure to the most sensitive population. So, a PHG is not a boundary line between a "safe" and "dangerous" level of a chemical, and drinking water is frequently demonstrated as safe to drink even if it contains chemicals at levels exceeding their PHGs. OEHHA provides additional information on potential health risks and its PHG on its website.

Summary Information for Violation of a MCL, MRDL, AL, TT, or Monitoring and Reporting Requirement

VIOLATION OF A MCL, MRDL, AL, TT, OR MONITORING AND REPORTING REQUIREMENT				
Violation	**Explanation**	**Duration**	**Actions Taken to Correct the Violation**	**Health Effects Language**
***Hexavalent Chromium**	Discharge from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile manufacturing facilities; erosion of natural deposits	1	In 2014, the State of California adopted a new drinking water MCL of 10 ppb for Hexavalent Chromium. One of our wells tested at 12 ppb, the other tested at non-detect. We are monitoring quarterly, as required by the State Water Resource Control Board.	Some people who drinking water containing hexavalent chromium in excess of the MCL over many years may have an increased risk of getting cancer.
Total Coliform Bacteria	Naturally present in the environment	1	We have adopted improved disinfection procedures to ensure that this will not occur again. Coliform were found in more samples than allowed and this was a warning of potential problems.	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other; potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
Fecal Coliform or *E. coli*	Human and animal fecal waste	1	We have adopted improved disinfection procedures to ensure that this will not occur again. E coli were found in more samples than allowed and this was a warning of potential problems.	Fecal coliforms and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health

				risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

For Water Systems Providing Ground Water as a Source of Drinking Water

TABLE 7 – SAMPLING RESULTS SHOWING FECAL INDICATOR-POSITIVE GROUND WATER SOURCE SAMPLES

Microbiological Contaminants (complete if fecal-indicator detected)	**Total No. of Detections**	**Sample Dates**	**MCL [MRDL]**	**PHG (MCLG) [MRDLG]**	**Typical Source of Contaminant**
E. coli	1 (In the year)	7/23/15	0	(0)	Human and animal fecal waste
Enterococci	0 (In the year)		TT	N/A	Human and animal fecal waste
Coliphage	0 (In the year)		TT	N/A	Human and animal fecal waste

2017 Consumer Confidence Report

Water System Name: **Tooleville Mutual Non-Profit Water Association, Inc.** Report Date: July 1, 2018

We test the drinking water quality for many constituents as required by state and federal regulations. This report shows the results of our monitoring for the period of January 1 - December 31, 2017 and may include earlier monitoring data.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo ó hable con alguien que lo entienda bien.

Type of water source(s) in use: Groundwater – Well water

Name & general location of source(s): Morgan Well, East end of Morgan St. and Alfred Well, North of Alfred St.

Drinking Water Source Assessment information:

Completed by the Tulare County Department of Health Services. A source water assessment was conducted for the water supply well in December 2002.

The activities to which the Tooleville water system is most vulnerable include a nitrate plume, historic leaking fuel tanks, sewer systems, and agricultural activity and drainage. The property is within three pesticide management zones: bromacil, diuron and simazine. The well sites are surrounded by citrus groves, pasture land, and residential development. The leaking fuel tanks (in the 10-year time of travel zone) have been removed and remediation has been completed on the site. A copy of the complete assessment may be viewed at the office of Environmental Health Services, 5957 S. Mooney Blvd., Visalia, CA 93277.

Time and place of regularly scheduled board meetings for public participation: 4th Tuesdays of February, April, June, August, October, December at the Water Company Trailer on Alfred (6:00pm); please call to confirm.

For more information, contact: Ruben Salazar Phone: (559) 909-2098

TERMS USED IN THIS REPORT

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (U.S. EPA).

Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Secondary Drinking Water Standards (SDWS): MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the MCL levels.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Regulatory Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

Variances and Exemptions: State Board permission to exceed an MCL or not comply with a treatment technique under certain conditions.

Level 1 Assessment: A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

Level 2 Assessment: A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an *E. coli* MCL violation has

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants. **Primary Drinking Water Standards (PDWS):** MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.	occurred and/or why total coliform bacteria have been found in our water system on multiple occasions. **ND**: not detectable at testing limit **ppm**: parts per million or milligrams per liter (mg/L) **ppb**: parts per billion or micrograms per liter (μg/L) **ppt**: parts per trillion or nanograms per liter (ng/L) **ppq**: parts per quadrillion or picogram per liter (pg/L) **pCi/L**: picocuries per liter (a measure of radiation)

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- *Microbial contaminants*, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants*, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- *Pesticides and herbicides*, that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- *Radioactive contaminants*, that can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the U.S. EPA and the State Water Resources Control Board (State Board) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. State Board regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

Tables 1, 2, 3, 4, 5, and 6 list all of the drinking water contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The State Board allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, are more than one year old. Any violation of an AL, MCL, MRDL, or TT is asterisked. Additional information regarding the violation is provided later in this report.

TABLE 1 – SAMPLING RESULTS SHOWING THE DETECTION OF COLIFORM BACTERIA

Microbiological Contaminants (complete if bacteria detected)	**Highest No. of Detections**	**No. of Months in Violation**	**MCL**	**MCLG**	**Typical Source of Bacteria**
*Total Coliform Bacteria (state Total Coliform Rule)	3 (In a mo.)	3	1 positive monthly sample	0	Naturally present in the environment
Fecal Coliform or *E. coli* (state Total Coliform Rule)	0 (In the year)	0	A routine sample and a repeat sample are total coliform positive, and one of these is also fecal coliform or *E. coli* positive	0	Human and animal fecal waste

E. coli (federal Revised Total Coliform Rule)	(In the year)		(a)	0	Human and animal fecal waste

(a) Routine and repeat samples are total coliform-positive and either is *E. coli*-positive or system fails to take repeat samples following *E. coli*-positive routine sample or system fails to analyze total coliform-positive repeat sample for *E. coli*.

TABLE 2 – SAMPLING RESULTS SHOWING THE DETECTION OF LEAD AND COPPER

Lead and Copper (complete if lead or copper detected in the last sample set)	**Sample Date**	**No. of Samples Collected**	**90th Percentile Level Detected**	**No. Sites Exceeding AL**	**AL**	**PHG**	**No. of Schools Requesting Lead Sampling**	**Typical Source of Contaminant**
Lead (ppb)	0	0	0	0	15	0.2		Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits
Copper (ppm)	7/16/13	0	0	0	1.3	0.3	Not applicable	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

TABLE 3 – SAMPLING RESULTS FOR SODIUM AND HARDNESS

Chemical or Constituent (and reporting units)	**Sample Date**	**Level Detected**	**Range of Detections**	**MCL**	**PHG (MCLG)**	**Typical Source of Contaminant**
Sodium (ppm)	7/16/13	145	90-200	none	none	Salt present in the water and is generally naturally occurring
Hardness (ppm)	7/16/13	430	300-560	none	none	Sum of polyvalent cations present in the water, generally magnesium and calcium, and are usually naturally occurring

TABLE 4 – DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	**Sample Date**	**Level Detected**	**Range of Detections**	**MCL [MRDL]**	**PHG (MCLG) [MRDLG]**	**Typical Source of Contaminant**
Nitrate, ppm	1/27/14, 5/13/14, 8/27/14, 10/29/14, 12/12/14,	8.4	4.7-8.7	10	10	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits

	11/6/15, 12/9/15, 4/14/16, 9/9/16, 12/16/1 6 2/15/17					
Gross Alpha, pCi/L	1/27/14, 5/13/14	1.93	0 - 4.97	15.00	NA	Erosion of Natural deposits
Arsenic, ppb	7/16/13	ND	ND	10	ND	Erosion of natural deposits; runoff from orchards
***Hexavalent Chromium**, ppb		**11**	11-13	**10**	0.02	Discharge from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile manufacturing facilities; erosion of natural deposits.
Total Trihalomethanes, ppb	8/6/14, 9/9/15 6/23/16	2.6	2.6	80	N/A	By-product of drinking water disinfection
Total Haloacetic Acids (HAA), ppb	8/6/14, 9/9/15 6/23/16	ND	ND	60	N/A	By-product of drinking water disinfection
Flouride, ppm	7/16/13	0.23	0.21 to 0.24	2.00	N/A	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Barium, ppm	7/16/13	0.09	0.051 to 0.13	1	N/A	Discharges of oil drilling wastes and from metal refineries; erosion of natural deposits
1,2-Dichlorobenzenem, ppb	7/22/09	96	96	600	600	Discharge from industrial chemical factories. Some people who drink water containing 1,2-dichlorobenzene in excess of the MCL over many years may experience liver, kidney, or circulatory system problems.
Selenium, ppb	7/16/13	6	2.9 to 9	50	(50)	Discharge from petroleum, glass, and metal refineries; erosion of natural deposits; discharge from mines and chemical manufacturers; runoff from livestock lots (feed additive). Selenium is an essential nutrient. However, some people who

						drink water containing selenium in excess of the MCL over many years may experience hair or fingernail losses, numbness in fingers or toes, or circulation system problems.

TABLE 5 – DETECTION OF CONTAMINANTS WITH A SECONDARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	**Sample Date**	**Level Detected**	**Range of Detections**	**MCL**	**PHG (MCLG)**	**Typical Source of Contaminant**
Chromium, Total (ppb)	7/16/13	12.5	12 to 13	50	(100)	Discharge from steel and pulp mills and chrome plating; erosion of natural deposits
Specific Conductance (micromhos)	7/22/09	1570	940 to 2200	1600	NA	Substances that form ions when in water; seawater influence
Sulfate (mg/L)	7/22/09	40	36 to 44	500	NA	Runoff/leaching from natural deposits; industrial wastes
Chloride	7/22/09	380	160 to 600	500	NA	Runoff/leaching from natural deposits; seawater influence
Total Dissolved Solids	7/22/09	825	490 to 1200	1000	NA	Runoff/leaching from natural deposits

TABLE 6 – DETECTION OF UNREGULATED CONTAMINANTS

Chemical or Constituent	**Sample Date**	**Level Detected**	**Range of Detections**	**PHG**	**Health Effects Language**
Hexavalent Chromium	10/29/14, 12/12/14, 12/22/14, 7/17/15, 12/9/15, 9/9/16, 12/16/16 3/20/17	11	11-13	0.02 ppb	Some people who drink water containing hexavalent chromium in excess of the MCL over many years may have an increased risk of getting cancer.
Trichloropropane (1,2,3-TCP) ppt	9/6/11	ND	ND	5 ppt	Some people who use water containing 1,2,3-trichloropropane in excess of the notification level over many years may have an increased risk of getting cancer, based on studies in laboratory animals.

[1] There is currently no MCL for hexavalent chromium. The previous MCL of 0.010 mg/L was withdrawn on September 11, 2017.

Additional General Information on Drinking Water

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline (1-800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. U.S. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Lead-Specific Language for Community Water Systems: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. TOOLEVILLE MUTUAL NON-PROFIT WATER ASSOCIATION, INC is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. [Optional: If you do so, you may wish to collect the flushed water and reuse it for another beneficial purpose, such as watering plants.] If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4701) or at http://www.epa.gov/lead.

Nitrates above the MCL

A NOTE regarding NITRATES in our water: Historically, Tooleville water has been high in nitrates (as nitrogen) above 5 mg/L, but below 10 mg/L: For this reason, the water system in pursuing an alternative source of drinking water. However, due to the natural movement or groundwater, nitrate levels in a well can fluctuate. During 2017, all the water samples taken from our wells met the State and Federal standard for Nitrate.

Nitrate in drinking water at levels above 10 mg/L is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 10 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.

Hexavalent Chromium above the MCL

What is Hexavalent Chromium and why is there a public health concern? Chromium is a heavy metal that occurs throughout the environment. The Trivalent form is a required nutrient and has very low toxicity. The hexavalent form, also commonly known as Chromium-6, is more toxic and has been known to cause cancer when inhaled. In recent scientific studies in laboratory animals, Hexavalent Chromium has also been linked to cancer when ingested.
If my drinking water has Hexavalent Chromium above the PHG, is there a risk to my health? A drinking water sample with a detection of Hexavalent Chromium above the PHG of 0.02 ppb does not necessarily represent a public health concern. The PHG is based on a cancer risk of no more than one case of cancer per one million people. The PHG tries to account for persons at three different stages in their lives by including protection factors to account for age and by applying higher rates of water consumption in their calculation. The PHG represents the level of Hexavalent Chromium at which no adverse health effects would be anticipated over an entire lifetime of exposure to the most sensitive population. So, a PHG is not a boundary line between a "safe" and "dangerous" level of a chemical, and drinking water is frequently demonstrated as safe to drink even if it contains chemicals at levels exceeding their PHGs. OEHHA provides additional information on potential health risks and its PHG on its website.

For 2018 and until a new MCL is adopted, hexavalent chromium results will not be required to be included in the CCR. However, the State Water Resources Control Board (Water Board) recommends that any hexavalent chromium results that are collected by a PWS be reported in the CCR. The Water Board also recommends that the PWS provide some type

of notification that explains what happened regarding the hexavalent chromium MCL and what the PWS is doing in the interim while the Board is establishing a new MCL.

Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity.

Summary Information for Violation of a MCL, MRDL, AL, TT, or Monitoring and Reporting Requirement

VIOLATION OF A MCL, MRDL, AL, TT, OR MONITORING AND REPORTING REQUIREMENT				
Violation	**Explanation**	**Duration**	**Actions Taken to Correct the Violation**	**Health Effects Language**
***Hexavalent Chromium**	Discharge from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile manufacturing facilities; erosion of natural deposits	1	There is currently no MCL for hexavalent chromium. The previous MCL of 0.010 mg/L was withdrawn on September 11, 2017. One of our wells tested at 11 ppb, the other tested at non-detect. We are monitoring quarterly, as required by the State Water Resource Control Board.	Some people who drinking water containing hexavalent chromium in excess of the MCL over many years may have an increased risk of getting cancer.
Total Coliform Bacteria	Naturally present in the environment	3	We have adopted improved disinfection procedures to ensure that this will not occur again. Coliform were found in more samples than allowed and this was a warning of potential problems.	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.

APPENDIX G

EXETER WATER SYSTEM PRESSURE READINGS

180276 - EXETER WATER MASTER PLAN UPDATE

City of Exeter Pressure Readings

Location	Pressure (PSI)	
	MAX	MIN
3rd St and Firebaugh Ave	42.1	29.2
3rd St and Rocky Hills Dr	50.9	26.1
Belmont Ave and Glaze Rd	75.8	62.5
Crespi Ave and Buena Vista	42.9	29.0
Firebaugh Ave and G st	57.7	38.0
Rocky Hill Dr and Portola Ave	52.7	32.4
Belmont Ave and Visalia Rd	61.8	47.2
Visalia Rd and Elberta Rd	68.4	53.1
Firebaugh Ave and Belmont	65.8	60.7
Visalia Rd and Belmont Ave	64.9	51.5
Sequoia Dr and Velinca Dr	50.5	40.1
Vine St and Orange Ave	59.8	48.0
Orange Ave and Visalia Rd	59.4	47.6
Kaweah Ave and Rocky Hill Dr	52.0	49.5
Kaweah Ave and Sequoia Dr	53.4	51.2
Dobson Field	50.3	37.6
Rocky Hill Main	52.1	40.6
Kaweah Ave and Firebaugh	57.3	51.7
Palm St and G st	59.1	52.9

APPENDIX H

EXETER WATER MODEL RESULTS – FUTURE MDD

Scenario: Max Day Demand
Current Time Step: 0.000 h
FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
37	J-1	374.5	<None>	<Collection: 1 item>	6.62	495.7	52.4
40	J-2	386.1	<None>	<Collection: 1 item>	2.91	484.5	42.6
44	J-3	394.0	<None>	<Collection: 1 item>	3.99	478.3	36.5
46	J-4	381.2	<None>	<Collection: 1 item>	58.65	483.5	44.3
49	J-5	376.1	<None>	<Collection: 1 item>	3.86	487.9	48.4
53	J-6	390.8	<None>	<Collection: 1 item>	8.47	484.2	40.4
58	J-7	399.0	<None>	<Collection: 1 item>	5.48	480.6	35.3
64	J-8	376.8	<None>	<Collection: 1 item>	6.55	491.8	49.8
66	J-9	379.5	<None>	<Collection: 1 item>	12.54	490.9	48.2
70	J-10	377.5	<None>	<Collection: 1 item>	4.90	491.7	49.4
75	J-11	392.3	<None>	<Collection: 1 item>	12.50	478.5	37.3
78	J-12	382.6	<None>	<Collection: 1 item>	13.22	485.6	44.6
85	J-13	391.4	<None>	<Collection: 1 item>	6.48	479.1	38.0
94	J-14	392.8	<None>	<Collection: 1 item>	11.19	480.9	38.1
96	J-15	382.0	<None>	<Collection: 1 item>	9.25	485.5	44.8
99	J-16	385.2	<None>	<Collection: 1 item>	5.76	485.2	43.3
103	J-17	399.7	<None>	<Collection: 1 item>	4.77	482.0	35.6
108	J-18	387.9	<None>	<Collection: 1 item>	9.77	483.9	41.5
111	J-19	390.8	<None>	<Collection: 1 item>	13.62	483.3	40.0
117	J-20	382.4	<None>	<Collection: 1 item>	2.51	490.5	46.8
122	J-21	397.5	<None>	<Collection: 1 item>	0.02	483.5	37.2
126	J-22	393.9	<None>	<Collection: 1 item>	3.46	483.5	38.8
129	J-23	393.2	<None>	<Collection: 1 item>	9.96	483.6	39.1
131	J-24	378.0	<None>	<Collection: 1 item>	5.78	491.0	48.9
135	J-25	384.8	<None>	<Collection: 1 item>	13.68	483.1	42.5
138	J-26	371.0	<None>	<Collection: 1 item>	6.92	492.5	52.6
140	J-27	394.1	<None>	<Collection: 1 item>	6.12	483.5	38.7
142	J-28	381.0	<None>	<Collection: 1 item>	6.59	490.5	47.3
146	J-29	374.1	<None>	<Collection: 1 item>	1.94	488.9	49.6
149	J-30	377.0	<None>	<Collection: 1 item>	18.31	492.0	49.8
151	J-31	395.3	<None>	<Collection: 1 item>	5.08	482.4	37.7
154	J-32	379.7	<None>	<Collection: 1 item>	12.18	491.2	48.2
158	J-33	385.0	<None>	<Collection: 1 item>	14.03	483.1	42.5
161	J-34	391.2	<None>	<Collection: 1 item>	8.91	478.0	37.5
165	J-35	379.0	<None>	<Collection: 1 item>	6.38	490.7	48.3
168	J-36	385.7	<None>	<Collection: 1 item>	9.27	484.3	42.6
173	J-37	372.4	<None>	<Collection: 1 item>	4.26	491.9	51.7
176	J-38	385.4	<None>	<Collection: 1 item>	6.10	488.4	44.6
177	J-39	385.4	<None>	<Collection: 1 item>	3.47	488.4	44.6
180	J-40	375.0	<None>	<Collection: 1 item>	17.78	498.9	53.6
185	J-41	383.8	<None>	<Collection: 1 item>	3.97	488.7	45.4
186	J-42	383.7	<None>	<Collection: 1 item>	16.02	488.7	45.5
188	J-43	391.2	<None>	<Collection: 1 item>	9.90	484.0	40.1
192	J-44	376.9	<None>	<Collection: 1 item>	4.45	487.8	48.0
194	J-45	379.5	<None>	<Collection: 1 item>	21.18	487.5	46.8
198	J-46	397.4	<None>	<Collection: 1 item>	4.43	475.2	33.7
202	J-47	393.7	<None>	<Collection: 1 item>	15.77	478.2	36.6
205	J-48	392.0	<None>	<Collection: 1 item>	7.30	477.1	36.9
208	J-49	389.2	<None>	<Collection: 1 item>	5.32	469.1	34.6
211	J-50	378.5	<None>	<Collection: 1 item>	9.18	487.5	47.2
216	J-51	392.3	<None>	<Collection: 1 item>	8.80	483.8	39.6

219	J-52	383.2	<None>	<Collection: 1 item>	13.32	486.5	44.7
222	J-53	378.8	<None>	<Collection: 1 item>	7.90	491.0	48.5
228	J-54	378.4	<None>	<Collection: 1 item>	7.28	490.8	48.6
231	J-55	371.5	<None>	<Collection: 1 item>	6.06	492.1	52.2
235	J-56	371.7	<None>	<Collection: 1 item>	6.65	492.0	52.1
238	J-57	385.1	<None>	<Collection: 1 item>	4.41	478.1	40.2
240	J-58	372.0	<None>	<Collection: 1 item>	6.84	491.9	51.9
244	J-59	375.7	<None>	<Collection: 1 item>	11.06	494.5	51.4
246	J-60	385.2	<None>	<Collection: 1 item>	4.52	488.7	44.8
247	J-61	385.1	<None>	<Collection: 1 item>	4.64	488.7	44.8
252	J-62	391.5	<None>	<Collection: 1 item>	4.61	483.0	39.6
254	J-63	383.4	<None>	<Collection: 1 item>	2.96	490.0	46.1
255	J-64	383.6	<None>	<Collection: 1 item>	3.94	490.0	46.0
257	J-65	369.6	<None>	<Collection: 1 item>	4.39	492.5	53.2
263	J-66	369.6	<None>	<Collection: 1 item>	4.08	492.6	53.2
264	J-67	369.6	<None>	<Collection: 1 item>	0.00	492.6	53.2
266	J-68	377.8	<None>	<Collection: 1 item>	6.40	491.0	49.0
269	J-69	395.9	<None>	<Collection: 1 item>	7.09	476.1	34.7
274	J-70	398.9	<None>	<Collection: 1 item>	4.33	481.2	35.6
275	J-71	399.2	<None>	<Collection: 1 item>	5.21	481.2	35.4
277	J-72	385.2	<None>	<Collection: 1 item>	8.15	487.0	44.0
280	J-73	390.9	<None>	<Collection: 1 item>	2.34	483.1	39.9
281	J-74	390.9	<None>	<Collection: 1 item>	4.88	483.1	39.9
283	J-75	372.6	<None>	<Collection: 1 item>	12.05	492.5	51.9
295	J-76	396.5	<None>	<Collection: 1 item>	6.73	481.9	36.9
296	J-77	397.2	<None>	<Collection: 1 item>	4.21	481.6	36.5
298	J-78	395.1	<None>	<Collection: 1 item>	6.90	483.4	38.2
301	J-79	375.9	<None>	<Collection: 1 item>	7.90	488.1	48.6
303	J-80	379.7	<None>	<Collection: 1 item>	3.78	491.0	48.1
306	J-81	392.3	<None>	<Collection: 1 item>	4.92	483.6	39.5
307	J-82	392.7	<None>	<Collection: 1 item>	5.85	483.6	39.3
313	J-83	374.4	<None>	<Collection: 1 item>	7.90	488.9	49.5
315	J-84	373.8	<None>	<Collection: 1 item>	5.85	491.6	50.9
316	J-85	374.1	<None>	<Collection: 1 item>	1.60	491.4	50.7
320	J-86	378.3	<None>	<Collection: 1 item>	0.03	487.5	47.3
322	J-87	393.8	<None>	<Collection: 1 item>	6.88	479.3	37.0
324	J-88	379.5	<None>	<Collection: 1 item>	8.55	491.4	48.4
325	J-89	379.3	<None>	<Collection: 1 item>	10.32	491.4	48.5
327	J-90	392.0	<None>	<Collection: 1 item>	4.73	483.0	39.4
329	J-91	395.6	<None>	<Collection: 1 item>	4.26	482.2	37.5
331	J-92	386.5	<None>	<Collection: 1 item>	5.88	477.1	39.2
334	J-93	390.0	<None>	<Collection: 1 item>	10.24	483.1	40.3
336	J-94	385.7	<None>	<Collection: 1 item>	0.01	477.6	39.8
338	J-95	394.9	<None>	<Collection: 1 item>	5.28	482.7	38.0
340	J-96	382.9	<None>	<Collection: 1 item>	4.14	490.3	46.5
342	J-97	376.3	<None>	<Collection: 1 item>	4.73	487.9	48.3
346	J-98	384.3	<None>	<Collection: 1 item>	6.44	488.7	45.1
347	J-99	384.0	<None>	<Collection: 1 item>	2.87	488.7	45.3
349	J-100	389.1	<None>	<Collection: 1 item>	12.98	483.5	40.8
351	J-101	378.4	<None>	<Collection: 1 item>	2.15	491.7	49.0
355	J-102	386.8	<None>	<Collection: 1 item>	4.86	484.3	42.2
358	J-103	384.6	<None>	<Collection: 1 item>	0.01	479.5	41.0
360	J-104	376.5	<None>	<Collection: 1 item>	5.72	487.7	48.1
362	J-105	392.6	<None>	<Collection: 1 item>	14.61	483.8	39.4
365	J-106	400.0	<None>	<Collection: 1 item>	4.18	482.0	35.5
367	J-107	396.6	<None>	<Collection: 1 item>	3.17	483.0	37.3
368	J-108	397.0	<None>	<Collection: 1 item>	6.48	482.6	37.1
370	J-109	376.5	<None>	<Collection: 1 item>	5.19	492.2	50.0
372	J-110	397.6	<None>	<Collection: 1 item>	4.50	482.4	36.7
374	J-111	384.6	<None>	<Collection: 1 item>	1.35	487.0	44.3

375	J-112	385.0	<None>	<Collection: 1 item>	1.00	487.2	44.2
377	J-113	394.9	<None>	<Collection: 1 item>	4.05	483.4	38.3
380	J-114	385.1	<None>	<Collection: 1 item>	2.21	486.8	44.0
382	J-115	398.3	<None>	<Collection: 1 item>	7.42	482.2	36.3
383	J-116	399.1	<None>	<Collection: 1 item>	4.33	482.2	35.9
386	J-117	372.3	<None>	<Collection: 1 item>	0.00	492.9	52.2
387	J-118	372.5	<None>	<Collection: 1 item>	3.19	493.9	52.5
389	J-119	383.9	<None>	<Collection: 1 item>	5.32	489.6	45.8
390	J-120	384.3	<None>	<Collection: 1 item>	7.48	489.6	45.6
392	J-121	384.9	<None>	<Collection: 1 item>	0.00	487.2	44.2
394	J-122	376.5	<None>	<Collection: 1 item>	7.35	492.2	50.0
395	J-123	376.2	<None>	<Collection: 1 item>	26.88	492.2	50.2
397	J-124	393.3	<None>	<Collection: 1 item>	5.85	482.9	38.8
398	J-125	392.7	<None>	<Collection: 1 item>	1.67	482.9	39.0
401	J-126	389.5	<None>	<Collection: 1 item>	11.76	480.7	39.5
404	J-127	369.6	<None>	<Collection: 1 item>	1.27	492.6	53.2
406	J-128	396.6	<None>	<Collection: 1 item>	1.98	483.5	37.6
408	J-129	376.8	<None>	<Collection: 1 item>	8.35	492.5	50.0
409	J-130	376.8	<None>	<Collection: 1 item>	2.36	492.4	50.0
413	J-131	369.2	<None>	<Collection: 1 item>	0.27	492.9	53.5
417	J-132	384.2	<None>	<Collection: 1 item>	2.72	486.9	44.4
420	J-133	379.3	<None>	<Collection: 1 item>	8.62	490.8	48.3
421	J-134	378.8	<None>	<Collection: 1 item>	8.19	491.0	48.5
423	J-135	380.4	<None>	<Collection: 1 item>	4.88	490.7	47.7
425	J-136	400.2	<None>	<Collection: 1 item>	5.95	479.7	34.4
433	J-137	389.5	<None>	<Collection: 1 item>	18.20	462.2	31.5
437	J-138	375.3	<None>	<Collection: 1 item>	4.28	495.8	52.1
440	J-139	390.0	<None>	<Collection: 1 item>	6.12	484.2	40.7
441	J-140	389.8	<None>	<Collection: 1 item>	9.76	484.2	40.8
443	J-141	379.5	<None>	<Collection: 1 item>	3.54	491.0	48.3
445	J-142	378.7	<None>	<Collection: 1 item>	6.48	491.0	48.6
447	J-143	379.0	<None>	<Collection: 1 item>	6.16	491.0	48.5
449	J-144	379.5	<None>	<Collection: 1 item>	4.54	490.5	48.0
452	J-145	380.0	<None>	<Collection: 1 item>	10.62	490.9	48.0
455	J-146	390.1	<None>	<Collection: 1 item>	7.22	484.2	40.7
464	J-147	371.6	<None>	<Collection: 1 item>	12.36	491.9	52.0
469	J-148	375.4	<None>	<Collection: 1 item>	8.49	488.4	48.9
470	J-149	374.8	<None>	<Collection: 1 item>	8.44	488.7	49.3
472	J-150	371.5	<None>	<Collection: 1 item>	11.34	491.9	52.1
474	J-151	377.2	<None>	<Collection: 1 item>	7.83	487.6	47.7
475	J-152	377.8	<None>	<Collection: 1 item>	6.50	487.5	47.5
479	J-153	377.5	<None>	<Collection: 1 item>	13.32	491.0	49.1
482	J-154	385.8	<None>	<Collection: 1 item>	7.18	486.7	43.7
493	J-155	393.9	<None>	<Collection: 1 item>	7.11	473.3	34.3
494	J-156	395.0	<None>	<Collection: 1 item>	4.54	473.7	34.1
496	J-157	376.5	<None>	<Collection: 1 item>	8.40	492.2	50.1
498	J-158	395.4	<None>	<Collection: 1 item>	8.63	473.9	34.0
507	J-159	389.7	<None>	<Collection: 1 item>	8.66	484.4	40.9
524	J-160	373.3	<None>	<Collection: 1 item>	6.19	491.7	51.2
527	J-161	376.4	<None>	<Collection: 1 item>	6.16	492.3	50.1
534	J-162	377.6	<None>	<Collection: 1 item>	10.20	491.3	49.2
539	J-163	384.5	<None>	<Collection: 1 item>	7.28	489.2	45.3
542	J-164	378.2	<None>	<Collection: 1 item>	8.40	491.3	48.9
544	J-165	380.3	<None>	<Collection: 1 item>	5.57	490.5	47.7
548	J-166	387.7	<None>	<Collection: 1 item>	10.05	476.5	38.5
553	J-167	389.1	<None>	<Collection: 1 item>	6.67	484.2	41.1
556	J-168	386.0	<None>	<Collection: 1 item>	19.34	483.7	42.3
558	J-169	384.7	<None>	<Collection: 1 item>	13.13	488.3	44.8
559	J-170	384.6	<None>	<Collection: 1 item>	12.23	488.2	44.9
562	J-171	389.1	<None>	<Collection: 1 item>	5.88	484.2	41.2

567	J-172	390.3	<None>	<Collection: 1 item>	7.98	478.9	38.3
572	J-173	368.6	<None>	<Collection: 1 item>	0.00	493.6	54.1
576	J-174	384.4	<None>	<Collection: 1 item>	12.54	484.6	43.4
579	J-175	387.5	<None>	<Collection: 1 item>	11.34	478.4	39.4
582	J-176	393.3	<None>	<Collection: 1 item>	9.73	483.5	39.0
591	J-177	383.9	<None>	<Collection: 1 item>	12.43	483.5	43.1
595	J-178	377.6	<None>	<Collection: 1 item>	9.61	487.6	47.6
600	J-179	378.4	<None>	<Collection: 1 item>	9.31	487.5	47.2
605	J-180	389.4	<None>	<Collection: 1 item>	3.68	475.8	37.4
613	J-181	389.8	<None>	<Collection: 1 item>	7.28	484.0	40.8
615	J-182	373.5	<None>	<Collection: 1 item>	3.59	496.0	53.0
619	J-183	376.3	<None>	<Collection: 1 item>	4.41	490.6	49.4
620	J-184	377.5	<None>	<Collection: 1 item>	8.95	490.2	48.8
625	J-185	392.9	<None>	<Collection: 1 item>	11.34	484.2	39.5
637	J-186	380.9	<None>	<Collection: 1 item>	8.75	489.7	47.1
639	J-187	389.1	<None>	<Collection: 1 item>	8.82	481.6	40.0
641	J-188	395.8	<None>	<Collection: 1 item>	5.45	483.3	37.9
643	J-189	387.9	<None>	<Collection: 1 item>	3.25	477.8	38.9
647	J-190	371.7	<None>	<Collection: 1 item>	1.41	491.0	51.6
649	J-191	385.6	<None>	<Collection: 1 item>	6.73	487.4	44.0
653	J-192	383.8	<None>	<Collection: 1 item>	6.62	484.5	43.6
658	J-193	383.6	<None>	<Collection: 1 item>	11.99	488.0	45.2
661	J-194	383.1	<None>	<Collection: 1 item>	8.13	488.4	45.6
666	J-195	374.2	<None>	<Collection: 1 item>	5.15	491.4	50.7
671	J-196	391.0	<None>	<Collection: 1 item>	2.96	478.3	37.8
672	J-197	391.0	<None>	<Collection: 1 item>	0.91	478.3	37.8
678	J-198	386.9	<None>	<Collection: 1 item>	5.45	482.9	41.5
681	J-199	375.0	<None>	<Collection: 1 item>	16.15	488.1	48.9
708	J-200	375.7	<None>	<Collection: 1 item>	4.48	491.4	50.1
714	J-201	379.1	<None>	<Collection: 1 item>	3.06	486.5	46.5
718	J-202	388.0	<None>	<Collection: 1 item>	15.10	483.3	41.2
730	J-203	386.6	<None>	<Collection: 1 item>	9.37	481.5	41.1
741	J-204	398.2	<None>	<Collection: 1 item>	12.48	480.9	35.8
758	J-205	379.9	<None>	<Collection: 1 item>	3.34	490.7	47.9
759	J-206	379.9	<None>	<Collection: 1 item>	1.69	490.7	47.9
762	J-207	385.7	<None>	<Collection: 1 item>	20.58	486.9	43.8
771	J-208	387.4	<None>	<Collection: 1 item>	10.62	485.4	42.4
776	J-209	382.1	<None>	<Collection: 1 item>	11.25	487.8	45.7
790	J-210	387.4	<None>	<Collection: 1 item>	8.59	482.2	41.0
796	J-211	378.7	<None>	<Collection: 1 item>	3.41	487.5	47.1
798	J-212	387.1	<None>	<Collection: 1 item>	9.25	484.7	42.2
801	J-213	381.6	<None>	<Collection: 1 item>	11.27	487.8	45.9
813	J-214	388.4	<None>	<Collection: 1 item>	10.29	484.2	41.4
841	J-215	387.0	<None>	<Collection: 1 item>	5.91	483.3	41.7
844	J-216	383.4	<None>	<Collection: 1 item>	14.80	485.1	44.0
847	J-217	387.5	<None>	<Collection: 1 item>	9.25	481.4	40.6
861	J-218	383.8	<None>	<Collection: 1 item>	8.02	487.2	44.7
865	J-219	379.0	<None>	<Collection: 1 item>	6.16	491.3	48.6
874	J-220	379.6	<None>	<Collection: 1 item>	4.58	490.8	48.1
875	J-221	379.6	<None>	<Collection: 1 item>	1.44	490.8	48.1
896	J-222	389.6	<None>	<Collection: 1 item>	12.41	483.6	40.7
927	J-223	381.2	<None>	<Collection: 1 item>	3.57	485.8	45.3
939	J-224	375.4	<None>	<Collection: 1 item>	19.44	492.2	50.5
946	J-225	384.4	<None>	<Collection: 1 item>	16.09	486.3	44.1
952	J-226	386.3	<None>	<Collection: 1 item>	8.35	484.2	42.4
958	J-227	383.1	<None>	<Collection: 1 item>	13.87	487.1	45.0
963	J-228	381.3	<None>	<Collection: 1 item>	10.82	486.8	45.6
966	J-229	381.7	<None>	<Collection: 1 item>	4.41	485.8	45.1
971	J-230	379.1	<None>	<Collection: 1 item>	3.46	487.1	46.7
976	J-231	388.6	<None>	<Collection: 1 item>	1.60	484.7	41.6

984	J-232	392.8	<None>	<Collection: 1 item>	9.46	483.3	39.1
988	J-233	384.7	<None>	<Collection: 1 item>	2.09	486.9	44.2
1003	J-234	388.8	<None>	<Collection: 1 item>	3.76	484.5	41.4
1012	J-235	380.7	<None>	<Collection: 1 item>	6.62	485.8	45.5
1050	J-236	376.9	<None>	<Collection: 1 item>	24.00	484.1	46.4
1055	J-237	396.3	<None>	<Collection: 1 item>	2.14	483.2	37.6
1069	J-238	382.9	<None>	<Collection: 1 item>	10.05	487.8	45.4
1080	J-239	389.8	<None>	<Collection: 1 item>	6.59	483.7	40.6
1090	J-240	379.1	<None>	<Collection: 1 item>	8.19	490.9	48.3
1139	J-241	388.7	<None>	<Collection: 1 item>	7.20	484.3	41.4
1142	J-242	380.4	<None>	<Collection: 1 item>	15.14	490.2	47.5
1157	J-243	376.3	<None>	<Collection: 1 item>	4.39	491.2	49.7
1159	J-244	374.2	<None>	<Collection: 1 item>	7.20	492.2	51.1
1167	J-245	384.5	<None>	<Collection: 1 item>	7.79	486.3	44.0
1174	J-246	400.4	<None>	<Collection: 1 item>	6.16	482.3	35.5
1179	J-247	377.2	<None>	<Collection: 1 item>	8.42	487.7	47.8
1185	J-248	397.2	<None>	<Collection: 1 item>	5.07	483.3	37.3
1188	J-249	383.6	<None>	<Collection: 1 item>	14.23	485.2	43.9
1190	J-250	386.7	<None>	<Collection: 1 item>	3.81	484.5	42.3
1191	J-251	386.9	<None>	<Collection: 1 item>	6.67	484.8	42.3
1208	J-252	389.1	<None>	<Collection: 1 item>	8.82	481.2	39.9
1215	J-253	380.7	<None>	<Collection: 1 item>	11.72	488.1	46.5
1224	J-254	387.4	<None>	<Collection: 1 item>	10.53	485.4	42.4
1227	J-255	378.4	<None>	<Collection: 1 item>	5.38	492.1	49.2
1253	J-256	374.6	<None>	<Collection: 1 item>	7.71	492.2	50.9
1261	J-257	396.6	<None>	<Collection: 1 item>	8.53	483.5	37.6
1283	J-258	377.6	<None>	<Collection: 1 item>	3.25	491.6	49.3
1320	J-259	375.4	<None>	<Collection: 1 item>	15.41	492.1	50.5
1322	J-260	381.7	<None>	<Collection: 1 item>	5.48	485.8	45.1
1324	J-261	378.4	<None>	<Collection: 1 item>	3.76	487.0	47.0
1327	J-262	378.9	<None>	<Collection: 1 item>	1.96	486.5	46.5
1331	J-263	394.1	<None>	<Collection: 1 item>	10.96	481.4	37.8
1341	J-264	392.0	<None>	<Collection: 1 item>	8.59	483.1	39.4
1361	J-265	393.0	<None>	<Collection: 1 item>	3.36	482.9	38.9
1368	J-266	388.8	<None>	<Collection: 1 item>	3.54	481.4	40.1
1392	J-267	373.6	<None>	<Collection: 1 item>	15.33	492.1	51.3
1397	J-268	379.8	<None>	<Collection: 1 item>	10.11	489.6	47.5
1401	J-269	375.5	<None>	<Collection: 1 item>	2.72	490.8	49.9
1403	J-270	379.0	<None>	<Collection: 1 item>	12.24	487.3	46.8
1424	J-271	394.5	<None>	<Collection: 1 item>	9.29	483.5	38.5
1426	J-272	377.6	<None>	<Collection: 1 item>	7.08	491.1	49.1
1455	J-273	382.5	<None>	<Collection: 1 item>	7.02	490.1	46.6
1458	J-274	373.8	<None>	<Collection: 1 item>	3.29	491.1	50.7
1461	J-275	395.8	<None>	<Collection: 1 item>	7.48	483.5	37.9
1469	J-276	377.2	<None>	<Collection: 1 item>	6.80	491.2	49.3
1471	J-277	381.4	<None>	<Collection: 1 item>	5.87	490.4	47.2
1494	J-278	388.1	<None>	<Collection: 1 item>	3.74	484.9	41.9
1504	J-279	381.7	<None>	<Collection: 1 item>	3.02	490.5	47.1
1511	J-280	389.4	<None>	<Collection: 1 item>	7.14	480.6	39.5
1513	J-281	396.0	<None>	<Collection: 1 item>	2.14	483.3	37.8
1518	J-282	374.2	<None>	<Collection: 1 item>	6.16	492.2	51.0
1520	J-283	398.0	<None>	<Collection: 1 item>	8.80	482.3	36.5
1530	J-284	373.7	<None>	<Collection: 1 item>	6.84	495.0	52.5
1546	J-285	383.6	<None>	<Collection: 1 item>	10.18	490.1	46.1
1548	J-286	376.0	<None>	<Collection: 1 item>	3.61	487.9	48.4
1553	J-287	380.7	<None>	<Collection: 1 item>	8.23	490.0	47.3
1555	J-288	375.4	<None>	<Collection: 1 item>	3.34	488.0	48.7
1557	J-289	376.5	<None>	<Collection: 1 item>	3.10	487.9	48.2
1563	J-290	381.8	<None>	<Collection: 1 item>	18.28	490.0	46.8
1570	J-291	376.7	<None>	<Collection: 1 item>	3.65	491.0	49.4

1586	J-292	377.6	<None>	<Collection: 1 item>	6.63	487.5	47.5
1588	J-293	379.0	<None>	<Collection: 1 item>	5.70	490.9	48.4
1592	J-294	374.9	<None>	<Collection: 1 item>	4.34	490.9	50.2
1594	J-295	378.2	<None>	<Collection: 1 item>	6.55	488.1	47.5
1596	J-296	374.7	<None>	<Collection: 1 item>	4.48	490.9	50.3
1598	J-297	373.0	<None>	<Collection: 1 item>	2.32	491.8	51.4
1602	J-298	382.3	<None>	<Collection: 1 item>	12.71	487.0	45.3
1604	J-299	379.1	<None>	<Collection: 1 item>	14.14	490.5	48.2
1606	J-300	376.6	<None>	<Collection: 1 item>	6.68	490.8	49.4
1607	J-301	376.5	<None>	<Collection: 1 item>	6.52	490.8	49.5
1609	J-302	373.6	<None>	<Collection: 1 item>	3.17	491.4	51.0
1611	J-303	378.2	<None>	<Collection: 1 item>	3.94	487.2	47.2
1613	J-304	376.9	<None>	<Collection: 1 item>	4.28	491.0	49.4
1617	J-305	378.1	<None>	<Collection: 1 item>	7.64	491.3	49.0
1619	J-306	376.3	<None>	<Collection: 1 item>	5.76	491.7	49.9
1623	J-307	386.7	<None>	<Collection: 1 item>	4.34	481.8	41.2
1625	J-308	382.3	<None>	<Collection: 1 item>	5.64	490.5	46.8
1627	J-309	375.2	<None>	<Collection: 1 item>	10.36	492.2	50.6
1629	J-310	380.1	<None>	<Collection: 1 item>	5.51	490.5	47.8
1632	J-311	377.7	<None>	<Collection: 1 item>	12.75	490.8	48.9
1634	J-312	389.5	<None>	<Collection: 1 item>	6.40	477.6	38.1
1636	J-313	396.4	<None>	<Collection: 1 item>	2.72	483.2	37.6
1637	J-314	396.8	<None>	<Collection: 1 item>	3.93	483.2	37.4
1644	J-315	375.9	<None>	<Collection: 1 item>	4.31	491.3	49.9
1646	J-316	391.2	<None>	<Collection: 1 item>	3.81	477.9	37.5
1648	J-317	388.4	<None>	<Collection: 1 item>	5.87	477.6	38.6
1650	J-318	387.7	<None>	<Collection: 1 item>	3.69	485.4	42.3
1652	J-319	390.8	<None>	<Collection: 1 item>	6.95	477.8	37.7
1654	J-320	383.8	<None>	<Collection: 1 item>	8.69	488.7	45.4
1656	J-321	389.1	<None>	<Collection: 1 item>	6.90	477.6	38.3
1658	J-322	375.7	<None>	<Collection: 1 item>	4.50	491.7	50.2
1660	J-323	372.6	<None>	<Collection: 1 item>	11.53	492.1	51.7
1662	J-324	388.4	<None>	<Collection: 1 item>	6.31	484.5	41.6
1665	J-325	374.9	<None>	<Collection: 1 item>	6.57	491.0	50.2
1666	J-326	375.3	<None>	<Collection: 1 item>	3.53	491.0	50.1
1671	J-327	374.7	<None>	<Collection: 1 item>	2.09	491.0	50.3
1674	J-328	375.5	<None>	<Collection: 1 item>	6.06	491.0	50.0
1676	J-329	388.8	<None>	<Collection: 1 item>	3.86	484.5	41.4
1678	J-330	372.1	<None>	<Collection: 1 item>	6.99	489.9	51.0
1680	J-331	390.1	<None>	<Collection: 1 item>	9.56	477.6	37.8
1685	J-332	376.1	<None>	<Collection: 1 item>	7.28	492.4	50.3
1687	J-333	379.8	<None>	<Collection: 1 item>	5.66	490.9	48.1
1690	J-334	393.5	<None>	<Collection: 1 item>	7.71	482.2	38.4
1692	J-335	400.0	<None>	<Collection: 1 item>	4.54	481.8	35.4
1694	J-336	396.2	<None>	<Collection: 1 item>	9.09	480.9	36.6
1696	J-337	380.7	<None>	<Collection: 1 item>	1.86	490.6	47.5
1698	J-338	381.1	<None>	<Collection: 1 item>	5.41	489.8	47.0
1700	J-339	375.5	<None>	<Collection: 1 item>	2.51	490.7	49.8
1701	J-340	376.0	<None>	<Collection: 1 item>	3.84	490.6	49.6
1703	J-341	373.5	<None>	<Collection: 1 item>	3.63	491.8	51.2
1705	J-342	377.3	<None>	<Collection: 1 item>	8.09	490.6	49.0
1707	J-343	373.0	<None>	<Collection: 1 item>	8.42	488.9	50.1
1709	J-344	373.8	<None>	<Collection: 1 item>	3.97	491.4	50.9
1711	J-345	377.2	<None>	<Collection: 1 item>	5.05	491.8	49.6
1713	J-346	373.5	<None>	<Collection: 1 item>	8.82	488.5	49.8
1715	J-347	373.8	<None>	<Collection: 1 item>	6.35	491.7	51.0
1718	J-348	375.2	<None>	<Collection: 1 item>	3.14	490.9	50.0
1720	J-349	377.0	<None>	<Collection: 1 item>	6.01	492.3	49.9
1725	J-350	400.6	<None>	<Collection: 1 item>	4.79	481.6	35.1
1727	J-351	374.2	<None>	<Collection: 1 item>	4.22	491.1	50.6

1732	J-352	375.1	<None>	<Collection: 1 item>	3.44	490.9	50.1
1735	J-353	386.2	<None>	<Collection: 1 item>	11.23	482.1	41.5
1737	J-354	381.9	<None>	<Collection: 1 item>	7.79	490.2	46.9
1740	J-355	388.1	<None>	<Collection: 1 item>	6.27	481.4	40.4
1743	J-356	377.2	<None>	<Collection: 1 item>	7.49	492.4	49.8
1750	J-357	375.3	<None>	<Collection: 1 item>	6.15	494.5	51.5
1757	J-358	373.7	<None>	<Collection: 1 item>	9.94	491.1	50.8
1760	J-359	381.4	<None>	<Collection: 1 item>	8.55	489.8	46.9
1764	J-360	372.3	<None>	<Collection: 1 item>	4.92	491.8	51.7
1767	J-361	373.0	<None>	<Collection: 1 item>	5.76	491.4	51.2
1769	J-362	380.1	<None>	<Collection: 1 item>	5.02	490.5	47.8
1772	J-363	379.1	<None>	<Collection: 1 item>	5.95	490.9	48.4
1774	J-364	379.6	<None>	<Collection: 1 item>	9.76	486.5	46.3
1775	J-365	380.0	<None>	<Collection: 1 item>	3.44	486.5	46.0
1777	J-366	385.7	<None>	<Collection: 1 item>	7.20	482.0	41.7
1780	J-367	394.8	<None>	<Collection: 1 item>	9.42	483.3	38.3
1781	J-368	395.3	<None>	<Collection: 1 item>	1.18	483.3	38.1
1787	J-369	374.0	<None>	<Collection: 1 item>	7.42	495.6	52.6
1792	J-370	379.2	<None>	<Collection: 1 item>	6.19	490.5	48.2
1803	J-371	390.6	<None>	<Collection: 1 item>	5.95	478.1	37.9
1807	J-372	373.5	<None>	<Collection: 1 item>	6.71	494.6	52.4
1810	J-373	390.0	<None>	<Collection: 1 item>	7.43	477.7	37.9
1812	J-374	374.4	<None>	<Collection: 1 item>	4.79	488.1	49.2
1813	J-375	374.0	<None>	<Collection: 1 item>	8.13	488.2	49.4
1818	J-376	376.6	<None>	<Collection: 1 item>	5.78	491.3	49.6
1823	J-377	384.0	<None>	<Collection: 1 item>	6.71	490.3	46.0
1827	J-378	384.2	<None>	<Collection: 1 item>	6.40	490.0	45.8
1831	J-379	375.4	<None>	<Collection: 1 item>	5.21	487.9	48.7
1834	J-380	375.1	<None>	<Collection: 1 item>	5.78	488.0	48.8
1837	J-381	375.7	<None>	<Collection: 1 item>	5.87	487.9	48.5
1842	J-382	399.4	<None>	<Collection: 1 item>	4.74	482.3	35.9
1845	J-383	381.8	<None>	<Collection: 1 item>	6.88	490.4	47.0
1856	J-384	379.8	<None>	<Collection: 1 item>	15.23	490.5	47.9
1868	J-385	382.4	<None>	<Collection: 1 item>	11.09	488.8	46.0
1869	J-386	381.9	<None>	<Collection: 1 item>	4.90	488.7	46.2
1882	J-387	384.0	<None>	<Collection: 1 item>	4.56	490.5	46.1
1898	J-388	373.1	<None>	<Collection: 1 item>	7.14	495.0	52.7
1900	J-389	374.5	<None>	<Collection: 1 item>	6.86	495.6	52.4
1911	J-390	387.5	<None>	<Collection: 1 item>	4.22	485.4	42.4
1915	J-391	389.5	<None>	<Collection: 1 item>	9.65	483.6	40.7
1936	J-392	375.9	<None>	<Collection: 1 item>	10.58	490.9	49.8
1941	J-393	379.6	<None>	<Collection: 1 item>	10.60	486.9	46.4
1943	J-394	388.2	<None>	<Collection: 1 item>	11.34	484.1	41.5
1949	J-395	378.0	<None>	<Collection: 1 item>	15.73	490.6	48.7
1967	J-396	381.1	<None>	<Collection: 1 item>	15.28	490.0	47.1
1968	J-397	381.7	<None>	<Collection: 1 item>	44.93	489.9	46.8
1978	J-398	377.6	<None>	<Collection: 1 item>	19.63	491.8	49.4
1987	J-399	387.9	<None>	<Collection: 1 item>	12.86	477.6	38.8
1998	J-400	384.5	<None>	<Collection: 1 item>	7.60	487.4	44.5
2003	J-401	385.0	<None>	<Collection: 1 item>	9.99	487.8	44.5
2017	J-402	396.0	<None>	<Collection: 1 item>	2.36	483.2	37.7
2024	J-403	391.6	<None>	<Collection: 1 item>	19.23	483.8	39.9
2026	J-404	376.9	<None>	<Collection: 1 item>	5.97	484.1	46.4
2028	J-405	379.7	<None>	<Collection: 1 item>	8.57	491.5	48.4
2030	J-406	378.2	<None>	<Collection: 1 item>	17.80	491.9	49.2
2035	J-407	378.3	<None>	<Collection: 1 item>	10.32	491.9	49.1
2037	J-408	386.0	<None>	<Collection: 1 item>	6.86	486.7	43.5
2039	J-409	395.2	<None>	<Collection: 1 item>	3.01	483.2	38.1
2045	J-410	396.4	<None>	<Collection: 1 item>	3.88	483.2	37.6
2054	J-411	378.4	<None>	<Collection: 1 item>	2.22	491.9	49.1

2058	J-412	395.8	<None>	<Collection: 1 item>	2.03	483.2	37.8
2065	J-413	377.2	<None>	<Collection: 1 item>	4.73	491.8	49.6
2067	J-414	396.6	<None>	<Collection: 1 item>	3.14	483.3	37.5
2069	J-415	387.8	<None>	<Collection: 1 item>	11.13	484.8	41.9
2074	J-416	379.3	<None>	<Collection: 1 item>	6.04	491.6	48.6
2084	J-417	397.5	<None>	<Collection: 1 item>	2.98	483.5	37.2
2090	J-418	387.0	<None>	<Collection: 1 item>	5.15	485.6	42.6
2106	J-419	383.7	<None>	<Collection: 1 item>	16.37	479.8	41.6
2130	J-420	376.7	<None>	<Collection: 1 item>	7.49	492.1	49.9
2132	J-421	386.0	<None>	<Collection: 1 item>	1.10	481.6	41.4
2153	J-422	379.3	<None>	<Collection: 1 item>	10.42	487.5	46.8
2160	J-423	391.3	<None>	<Collection: 1 item>	6.10	479.1	38.0
2166	J-424	386.1	<None>	<Collection: 1 item>	4.43	486.9	43.6
2363	J-425	396.6	<None>	<Collection: 1 item>	2.21	483.5	37.6
2368	J-426	394.5	<None>	<Collection: 1 item>	0.23	483.5	38.5
2373	J-427	394.7	<None>	<Collection: 1 item>	10.13	483.4	38.4
2409	J-428	393.6	<None>	<Collection: 1 item>	6.25	482.9	38.6
2419	J-429	393.5	<None>	<Collection: 1 item>	9.52	474.5	35.1
2425	J-430	383.3	<None>	<Collection: 1 item>	0.00	479.8	41.7
2429	J-431	389.7	<None>	<Collection: 1 item>	2.98	475.9	37.3
2432	J-432	388.0	<None>	<Collection: 1 item>	3.23	477.6	38.8
2437	J-433	391.9	<None>	<Collection: 1 item>	2.22	476.7	36.7
2438	J-434	391.7	<None>	<Collection: 1 item>	6.35	476.0	36.5
2452	J-435	390.2	<None>	<Collection: 1 item>	5.70	480.2	39.0
2475	J-436	386.4	<None>	<Collection: 1 item>	6.28	484.3	42.4
2478	J-437	386.0	<None>	<Collection: 1 item>	8.53	484.3	42.5
2481	J-438	386.9	<None>	<Collection: 1 item>	10.32	484.3	42.2
2489	J-439	385.0	<None>	<Collection: 1 item>	2.47	485.9	43.6
2494	J-440	381.3	<None>	<Collection: 1 item>	3.61	485.6	45.1
2499	J-441	386.3	<None>	<Collection: 1 item>	2.54	484.5	42.5
2514	J-442	386.1	<None>	<Collection: 1 item>	4.71	479.8	40.6
2518	J-443	381.4	<None>	<Collection: 1 item>	8.00	485.3	45.0
2527	J-444	391.4	<None>	<Collection: 1 item>	11.46	483.4	39.8
2537	J-445	389.9	<None>	<Collection: 1 item>	9.99	483.6	40.6
2540	J-446	388.8	<None>	<Collection: 1 item>	11.23	484.3	41.3
2549	J-447	385.3	<None>	<Collection: 1 item>	2.36	487.1	44.1
2552	J-448	385.0	<None>	<Collection: 1 item>	1.87	486.9	44.1
2555	J-449	385.3	<None>	<Collection: 1 item>	1.37	487.1	44.1
2558	J-450	385.1	<None>	<Collection: 1 item>	0.00	487.3	44.2
2565	J-451	385.1	<None>	<Collection: 1 item>	0.13	487.1	44.2
2712	J-457	389.8	<None>	<Collection: 1 item>	0.40	484.9	41.1
2718	J-460	389.7	<None>	<Collection: 1 item>	1.65	484.6	41.1
2724	J-462	388.5	<None>	<Collection: 1 item>	2.14	484.7	41.6
2730	J-464	389.1	<None>	<Collection: 1 item>	3.07	484.7	41.4
2745	J-466	369.7	<None>	<Collection: 1 item>	3.86	492.7	53.2
2752	J-468	371.5	<None>	<Collection: 1 item>	5.55	492.3	52.3
2768	J-472	376.3	<None>	<Collection: 1 item>	2.34	494.0	50.9
2854	J-493	373.5	<None>	<Collection: 1 item>	2.26	492.6	51.5
2934	J-498	389.4	<None>	<Collection: 1 item>	1.98	472.5	36.0
2993	J-507	377.8	<None>	<Collection: 0 items>	0.00	490.8	48.9
2995	J-508	377.8	<None>	<Collection: 0 items>	0.00	490.8	48.9
2997	J-509	393.2	<None>	<Collection: 0 items>	0.00	474.9	35.3
3000	J-510	395.6	<None>	<Collection: 0 items>	0.00	476.3	34.9
3024	J-511	397.0	<None>	<Collection: 0 items>	0.00	455.8	25.4
3026	J-512	394.0	<None>	<Collection: 1 item>	72.50	454.3	26.1
3028	J-513	409.0	<None>	<Collection: 1 item>	72.50	451.9	18.6
3030	J-514	412.0	<None>	<Collection: 1 item>	72.50	451.6	17.1
3032	J-515	394.0	<None>	<Collection: 2 items>	1,572.50	450.8	24.6
3035	J-516	376.4	<None>	<Collection: 0 items>	0.00	494.2	51.0
3038	J-517	370.0	<None>	<Collection: 1 item>	426.47	492.2	52.9

3040	J-518	403.0	<None>	<Collection: 1 item>	52.96	475.1	31.2
3042	J-519	380.0	<None>	<Collection: 1 item>	29.68	479.3	42.9
3044	J-520	400.0	<None>	<Collection: 1 item>	302.50	475.3	32.6
3046	J-521	389.7	<None>	<Collection: 1 item>	106.10	484.5	41.0
3048	J-522	385.1	<None>	<Collection: 1 item>	91.74	478.1	40.3
3050	J-523	400.0	<None>	<Collection: 0 items>	0.00	475.1	32.5
3053	J-524	343.1	<None>	<Collection: 1 item>	130.92	474.5	56.8
3055	J-525	400.0	<None>	<Collection: 1 item>	25.28	482.8	35.8
3061	J-527	400.0	<None>	<Collection: 0 items>	0.00	475.1	32.5
3065	J-528	383.0	<None>	<Collection: 0 items>	0.00	479.3	41.7
3072	J-529	353.6	<None>	<Collection: 0 items>	0.00	495.8	61.5
3081	J-530	396.3	<None>	<Collection: 0 items>	0.00	474.4	33.8

L:\Projects\2018\180276\ENGINEERING\Water System\WaterCAD\City of Exeter Water Masterplan_Future_Model_20190115_SK.wtg

Appendix I

Maximum Contaminant Levels and Regulatory Dates

MAXIMUM CONTAMINANT LEVELS AND REGULATORY DATES FOR DRINKING WATER
U.S. EPA VS CALIFORNIA
LAST UPDATED OCTOBER 2018

Contaminant	U.S. EPA		California	
	MCL (mg/L)	**Date**[a]	**MCL** (mg/L)	**Effective Date**
Inorganics				
Aluminum	0.05 to 0.2[b]	1/91	1 0.2[b]	2/25/89 9/8/94
Antimony	0.006	7/92	0.006	9/8/94
Arsenic	0.05 0.010	eff: 6/24/77 eff: 1/23/06	0.05 0.010	77 11/28/08
Asbestos	7 MFL[c]	1/91	7 MFL[c]	9/8/94
Barium	1 2	eff: 6/24/77 1/91	1	77
Beryllium	0.004	7/92	0.004	9/8/94
Cadmium	0.010 0.005	eff: 6/24/77 1/91	0.010 0.005	77 9/8/94
Chromium	0.05 0.1	eff: 6/24/77 1/91	0.05	77
Copper	1.3[d]	6/91	1[b] 1.3[d]	77 12/11/95
Cyanide	0.2	7/92	0.2 0.15	9/8/94 6/12/03
Fluoride	4 2[b]	4/86 4/86	2	4/98
Lead	0.05[e] 0.015[d]	eff: 6/24/77 6/91	0.05 [e] 0.015[d]	77 12/11/95
Mercury	0.002	eff: 6/24/77	0.002	77
Nickel	Remanded		0.1	9/8/94
Nitrate	(as N) 10	eff: 6/24/77	(as N03) 45	77
Nitrite (as N)	1	1/91	1	9/8/94
Total Nitrate/Nitrite (as N)	10	1/91	10	9/8/94
Perchlorate	-	-	0.006	10/18/07
Selenium	0.01 0.05	eff: 6/24/77 1/91	0.01 0.05	77 9/8/94
Thallium	0.002	7/92	0.002	9/8/94
Radionuclides				
Uranium	30 ug/L	12/7/00	20 pCi/L 20 pCi/L	1/1/89 6/11/06
Combined Radium - 226+228	5 pCi/L	eff: 6/24/77	5 pCi/L 5 pCi/L	77 6/11/06
Gross Alpha particle activity (excluding radon & uranium)	15 pCi/L	eff: 6/24/77	15 pCi/L 15 pCi/L	77 6/11/06
Gross Beta particle activity	4 millirem/yr	eff: 6/24/77	50 pCi/L[f] 4 millirem/yr	77 6/11/06
Strontium-90	8 pCi/L	eff: 6/24/77 now covered by Gross Beta	8 pCi/L[f] 8 pCi/L[f]	77 6/11/06
Tritium	20,000 pCi/L	eff: 6/24/77 now covered by Gross Beta	20,000 pCi/L[f] 20,000 pCi/L[f]	77 6/11/06

Contaminant	U.S. EPA		California	
	MCL (mg/L)	**Date**[a]	**MCL** (mg/L)	**Effective Date**
VOCS				
Benzene	0.005	6/87	0.001	2/25/89
Carbon Tetrachloride	0.005	6/87	0.0005	4/4/89
1,2-Dichlorobenzene	0.6	1/91	0.6	9/8/94
1,4-Dichlorobenzene	0.075	6/87	0.005	4/4/89
1,1-Dichloroethane	-	-	0.005	6/24/90
1,2-Dichloroethane	0.005	6/87	0.0005	4/4/89
1,1-Dichloroethylene	0.007	6/87	0.006	2/25/89
cis-1,2-Dichloroethylene	0.07	1/91	0.006	9/8/94
trans-1,2-Dichloroethylene	0.1	1/91	0.01	9/8/94
Dichloromethane	0.005	7/92	0.005	9/8/94
1,3-Dichloropropene	-	-	0.0005	2/25/89
1,2-Dichloropropane	0.005	1/91	0.005	6/24/90
Ethylbenzene	0.7	1/91	0.68 0.7 0.3	2/25/89 9/8/94 6/12/03
Methyl-tert-butyl ether (MTBE)	-	-	0.005[b] 0.013	1/7/99 5/17/00
Monochlorobenzene	0.1	1/91	0.03 0.07	2/25/89 9/8/94
Styrene	0.1	1/91	0.1	9/8/94
1,1,2,2-Tetrachloroethane	-	-	0.001	2/25/89
Tetrachloroethylene	0.005	1/91	0.005	5/89
Toluene	1	1/91	0.15	9/8/94
1,2,4 Trichlorobenzene	0.07	7/92	0.07 0.005	9/8/94 6/12/03
1,1,1-Trichloroethane	0.200	6/87	0.200	2/25/89
1,1,2-Trichloroethane	0.005	7/92	0.032 0.005	4/4/89 9/8/94
Trichloroethylene	0.005	6/87	0.005	2/25/89
Trichlorofluoromethane	-	-	0.15	6/24/90
1,1,2-Trichloro-1,2,2-Trifluoroethane	-	-	1.2	6/24/90
Vinyl chloride	0.002	6/87	0.0005	4/4/89
Xylenes	10	1/91	1.750	2/25/89

Contaminant	U.S. EPA		California	
	MCL (mg/L)	**Date**[a]	**MCL** (mg/L)	**Effective Date**
SOCS				
Alachlor	0.002	1/91	0.002	9/8/94
Atrazine	0.003	1/91	0.003 0.001	4/5/89 6/12/03
Bentazon	-	-	0.018	4/4/89
Benzo(a) Pyrene	0.0002	7/92	0.0002	9/8/94
Carbofuran	0.04	1/91	0.018	6/24/90
Chlordane	0.002	1/91	0.0001	6/24/90
Dalapon	0.2	7/92	0.2	9/8/94
Dibromochloropropane	0.0002	1/91	0.0001 0.0002	7/26/89 5/3/91
Di(2-ethylhexyl)adipate	0.4	7/92	0.4	9/8/94
Di(2-ethylhexyl)phthalate	0.006	7/92	0.004	6/24/90
2,4-D	0.1 0.07	eff: 6/24/77 1/91	0.1 0.07	77 9/8/94
Dinoseb	0.007	7/92	0.007	9/8/94
Diquat	0.02	7/92	0.02	9/8/94
Endothall	0.1	7/92	0.1	9/8/94
Endrin	0.0002 0.002	eff: 6/24/77 7/92	0.0002 0.002	77 9/8/94
Ethylene Dibromide	0.00005	1/91	0.00002 0.00005	2/25/89 9/8/94
Glyphosate	0.7	7/92	0.7	6/24/90
Heptachlor	0.0004	1/91	0.00001	6/24/90
Heptachlor Epoxide	0.0002	1/91	0.00001	6/24/90
Hexachlorobenzene	0.001	7/92	0.001	9/8/94
Hexachlorocyclopentadiene	0.05	7/92	0.05	9/8/94
Lindane	0.004 0.0002	eff: 6/24/77 1/91	0.004 0.0002	77 9/8/94
Methoxychlor	0.1 0.04	eff: 6/24/77 1/91	0.1 0.04 0.03	77 9/8/94 6/12/03
Molinate	-	-	0.02	4/4/89
Oxamyl	0.2	7/92	0.2 0.05	9/8/94 6/12/03
Pentachlorophenol	0.001	1/91	0.001	9/8/94
Picloram	0.5	7/92	0.5	9/8/94
Polychlorinated Biphenyls	0.0005	1/91	0.0005	9/8/94
Simazine	0.004	7/92	0.010 0.004	4/4/89 9/8/94
Thiobencarb	-	-	0.07 0.001[b]	4/4/89 4/4/89
Toxaphene	0.005 0.003	eff: 6/24/77 1/91	0.005 0.003	77 9/8/94
1,2,3- Trichloropropane	-	-	5×10^{-9}	12/14/17
2,3,7,8-TCDD (Dioxin)	3×10^{-8}	7/92	3×10^{-8}	9/8/94
2,4,5-TP (Silvex)	0.01 0.05	eff: 6/24/77 1/91	0.01 0.05	77 9/8/94

Contaminant	U.S. EPA		California	
	MCL (mg/L)	**Date**[a]	**MCL** (mg/L)	**Effective Date**
Disinfection Byproducts				
Total Trihalomethanes	0.100 0.080	11/29/79 eff: 11/29/83 eff: 1/1/02 [g]	0.100 0.080	3/14/83 6/17/06
Haloacetic acids (five)	0.060	eff: 1/1/02 [g]	0.060	6/17/06
Bromate	0.010	eff: 1/1/02 [g]	0.010	6/17/06
Chlorite	1.0	eff: 1/1/02 [g]	1.0	6/17/06
Treatment Technique				
Acrylamide	TT[h]	1/91	TT[h]	9/8/94
Epichlorohydrin	TT[h]	1/91	TT[h]	9/8/94

a. "eff." indicates the date the MCL took effect; any other date provided indicates when US EPA established (i.e., published) the MCL.
b. Secondary MCL.
c. MFL = million fibers per liter, with fiber length > 10 microns.
d. Regulatory Action Level; if system exceeds, it must take certain actions such as additional monitoring, corrosion control studies and treatment, and for lead, a public education program; replaces MCL.
e. The MCL for lead was rescinded with the adoption of the regulatory action level described in footnote d.
f. Gross beta MCL is 4 millirem/year annual dose equivalent to the total body or any internal organ; Sr-90 MCL = 4 millirem/year to bone marrow; tritium MCL = 4 millirem/year to total body
g. Effective for surface water systems serving more than 10,000 people; effective for all others 1/1/04.
h. TT = treatment technique, because an MCL is not feasible.

Appendix J

2015-2017 Exeter Annual Drinking Water Quality Reports

2015 Drinking Water Consumer Confidence Report

PWS ID# CA5410003

The City of Exeter

The City of Exeter, along with the rest of California, is entering it's fifth consecutive year of drought. The water shortage that we have experienced has caused many challenges. As a result of dropping water levels, three of the six active water wells in the City were rehabilitated in 2015.

Despite these setbacks, the City of Exeter remains committed to delivering quality water and service to our residents.

The picture above shows City Hall under construction in 1934

Source Water Assessment

The City of Exeter receives its water from underground aquifers that flow in a southwestern direction from the Sierra Nevada Mountains.

Assessments of the drinking water sources for the City of Exeter have been completed on the following wells: E-6W, E-9W, and E-11W in September 2001, E-12W in June 2004, E-13W in August 2007, and E-14W in February 2010. The sources are considered most vulnerable to the following activities associated with contaminants detected in the water supply: fertilizer/pesticide/herbicide applications. In addition, the sources are considered most vulnerable to these activities not associated with contaminants detected in the water supply: septic systems in high-density areas, agricultural/irrigation wells, injection wells/dry wells/sumps, metal plating/finishing fabricating, and automobile gas stations.

A copy of the complete assessment may be viewed at City Hall, 137 N. F St., Exeter, Ca 93221. You may request a summary of the assessment be sent to you by contacting the Public Works Department at (559) 592-3318.

Possible Contaminants in our Water

The sources of drinking water (tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, that come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- Radioactive contaminants that can be naturally-occurring or be the result of oil and gas production and mining activities.

Possible Contaminants in our Water (Cont.)

In order for the City of Exeter to ensure it supplies a safe product for its consumers we continually test our water to ensure we exceed U.S. Environmental Protection Agency (USEPA) and the California Department of Public Health standards.

Does this mean that all possible contaminants are removed from our drinking water? The answer is no. Drinking water, including bottle water, is expected to contain a small amount of contaminants. More information about possible contaminants and the potential health risks, can be obtained by calling the EPA's Safe Drinking Water Hotline at 1-800-426-4791

Lead and Nitrate in Drinking Water

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Exeter is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available by calling the Safe Drinking Water Hotline at 1-800-426-4791 or by visiting http://www.epa.gov/safewater/lead.

Lead and Nitrate in Drinking Water (CONT.)

Drinking water with Nitrate levels above 45 mg/L is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 45 mg/L may also affect the ability of the blood to carry oxygen in pregnant women and those with certain specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.

Monitoring Results

Definitions

In the following table, you may find unfamiliar terms and abbreviations. To help you better understand these terms, we've provided the following definitions:

Action Level (AL) - The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water utility must follow.

Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known expected risk to health. MCLGs allow for a margin of safety.

Microsiemens per Centimeter (uS/cm) - Represents the electrical conductivity of a solution.

NA - Not Applicable

ND (Non Detected) - Indicated that the substance was not found in the laboratory analysis.

Monitoring Results (Cont.)

<u>Parts Per Million (PPM) or Milligrams Per Liter (MG/L) -</u> One part by weight of analyte to 1 million parts by weight of the water sample.

<u>Parts Per Billion (PPB) or Micrograms Per Liter (ug/l) -</u> One part by weight of analyte to 1 billion parts by weight of the water sample.

<u>Picocurie per Liter (pCi/L) -</u> Measures the radioactivity in water.

Inorganic Contaminants

Inorganic contaminants can come from the erosion of natural deposits, runoff from orchards, leaching from septic tanks and/or sewage. These are measured either in ppm or ppb.

Units	Arsenic	Barium	Fluoride	Nitrate
Violation	N	N	N	N
Avg.	2.8	.11	.15	20.9
Range	2.5-3.5	.064-.14	.12-.17	4.8-40
Date	2013	2013	2013	2015
MCLG	.004	2	1	45
MCL	10	1	2	45

Synthetic Organic Contaminants

These contaminants are banned nematocide that may be present in the soils due to storm runoff or leaching from former soybeans, cotton, vineyards, tomatoes, and fruit trees.

Units	Dibromochloropropane DBCP
Violation	N
Avg.	.069
Range	ND-.072
Date	2015
MCLG	1.7
MCL	200

Radioactive Contaminant

These contaminants are from erosion of natural deposits.

Units	Gross Alpha	Radium	Uranium
Violation	N	N	N
Avg.	4.97	.523	5.32
Range	NA	.197-.97	3.6-7.3
Date	2013	2011	2012
MCLG	0	.019	.43
MCL	15	5	20

Monitoring Results (Cont.)

Volatile Organic Contaminants

These contaminants come from the discharge of petroleum and chemical factories and from fuel solvents.

Units	Xylenes
Violation	N
Avg.	.5
Range	NA
Date	2012
MCLG	1.8
MCL	1.75

Lead and Copper Tap Monitoring

Lead and copper contaminants can come from household plumbing systems.

Units	Copper	Lead
Number of Homes	4/52	0/52
90th Per-centile	.29	.0025
Date	2014	2014
MCLG	.3	.2

Monitoring Results (Cont.) Stage 2 Disinfectants and Disinfection By-Products

Byproduct of drinking water disinfection.

Units	TTHM S2
Violation	N
Level	ND-4.6
Date	2015
MCL	80

Secondary Contaminants and Unregulated Constituents

These contaminants come from various sources, such as corrosion of carbonate rock (Limestone), naturally occurring elements, stormwater runoff, organic materials, and internal corrosion of household plumbing.

Units	Secondary MCL	Avg.	Range	Date
Bicarbonate	NA	205	140-260	2013
Calcium	NA	48.5	33-65	2013
Chloride	500	31.5	15-60	2013
Color	15	1	ND-10	2011
Conductivity	NA	646	510-640	2014
Copper	1	117	NA	2014
Hardness	NA	176	120-210	2013

Secondary Contaminants and Unregulated Constituents (Cont.)

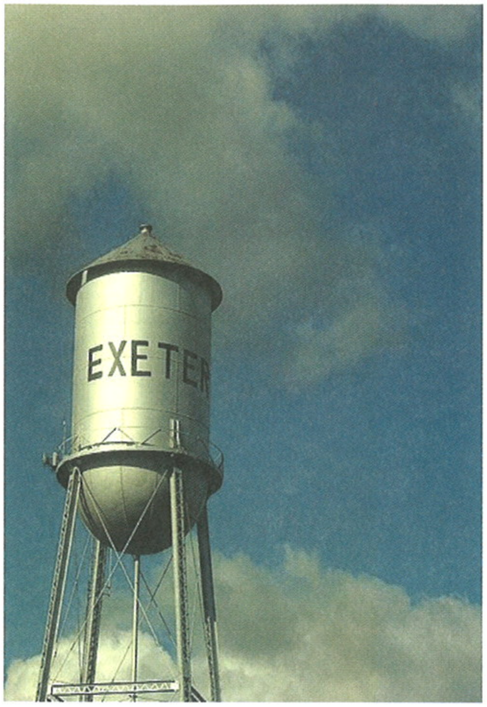
Units	Secondary MCL	Avg.	Range	Date
Magnesium	NA	16.1	8.6-22	2013
Manganese	50	19.5	ND-37	2011
Odor	3	1.2	1-2	2013
PH	6.5-8.5	8.17	8.1-8.3	2013
Potassium	NA	3.07	2.8-3.4	2013
Sodium	NA	49.5	42-66	2013
Specific	1600	570	450-680	2011
Sulfate	500	28.5	22-37	2013
Alkalinity	NA	205	140-260	2013
Dissolved	1000	336.7	290-400	2013
Turbidity	5	.22	ND-2.6	2011
Zinc	5	.08	.05-.27	2010

How to learn more about your drinking water.

If you have any questions about this report or for information about your water utility, please contact Daymon Qualls, Director of Public Works , by one of the following methods:

- Call the office at (559) 592-3318
- Write to: PO Box 237
  Exeter, CA 93221
- Send an email to:
  mibarra@exetercityhall.com

Report completed by Chris Troyan—Operator II



City of Exeter

PO Box 237
Exeter, CA 93221

Phone: 559-592-3318
Fax: 559-592-3516
Website: www.cityofexeter.com

The City of Exeter
POST OFFICE BOX 237
EXETER, CALIFORNIA 93221

PRESORTED
FIRST CLASS MAIL
US POSTAGE
PAID
VISALIA, CA
PERMIT NO. 142

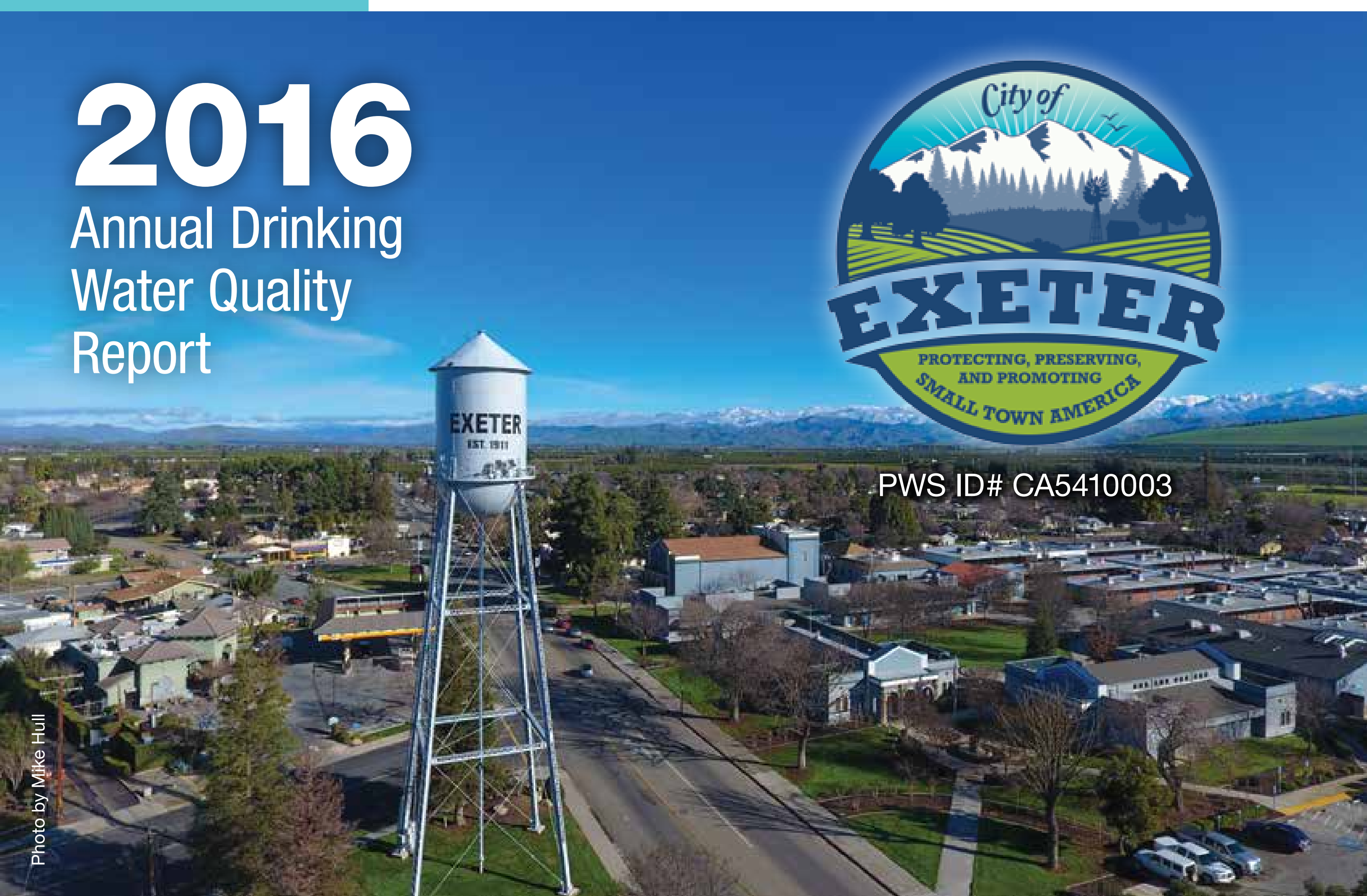
How can I learn more about our drinking water?

If you have any questions about this report or concerning your water utility, please contact Daymon Qualls, Director of Public Works, by one of the following methods:

- Call the office at (559) 592-3318
- Write to PO Box 237 Exeter, CA 93221
- Send email: mibarra@exetercityhall.com.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

City of Exeter
PWS ID# CA5410003
PO Box 237
Exeter, CA 93221



2016 Annual Drinking Water Quality Report

PWS ID# CA5410003

Photo by Mike Hull

2016 Annual Drinking Water Quality Report

The City of Exeter is pleased to share this report with you. This report is a summary of the quality of the water we provide our customers. The analysis covers January 1 through December 31, 2016, and was made by using the data from the most recent U.S. Environmental Protection Agency (EPA) and California Department of Public Health (CDPH) required tests and is presented in the attached pages. We hope this information helps you become more knowledgeable about what's in your drinking water.

Where Do We Get Our Drinking Water?

The City of Exeter receives its water from underground aquifers that flow in a southwestern direction from the Sierra Nevada Mountains.

Source Water Assessment

Assessments of the drinking water sources for the City of Exeter have been completed on the following wells: E-6W, E-9W, and E-11W in September 2001, E-12W in June 2004, E-13W in August 2007, and E-14W in February 2010 in compliance with local and state regulations. The sources are considered most vulnerable to the following activities associated with contaminants detected in the water supply: fertilizer/pesticide/herbicide applications. In addition, the sources are considered most vulnerable to these activities not associated with contaminants detected in the water supply: septic systems in high-density areas, agricultural/irrigation wells, injection wells/dry wells/sumps, metal plating/finishing fabricating, and automobile gas stations.

A copy of the complete assessment may be viewed at City Hall, 137 N. F St., Exeter, Ca 93221. You may request a summary of the assessment be sent to you by contacting the Public Works Department at (559) 592-3318.

Substances that Could be in Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- Radioactive contaminants, that can be naturally-occurring or be the result of oil and gas production and mining activities.

All Drinking Water May Contain Contaminants

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the California Department of Public Health (Department) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. In order for the City of Exeter to ensure it supplies a safe product for its consumers we continually test our water to ensure we exceed U.S. Environmental Protection Agency (USEPA) and the California Department of Public Health standards.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Lead and Drinking Water

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Exeter is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

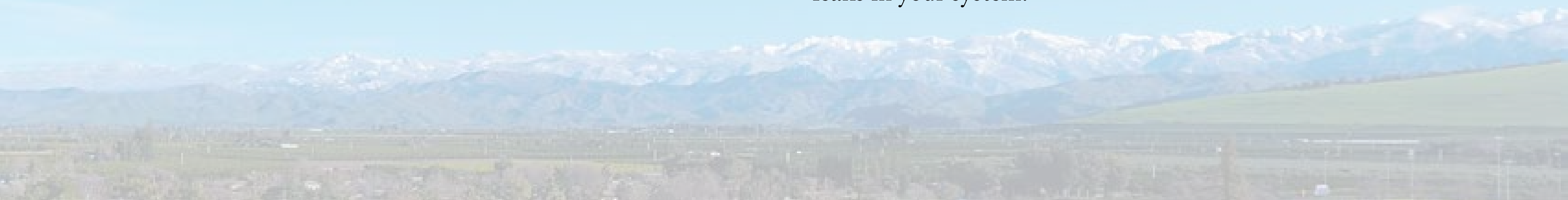
Nitrate in Drinking Water

Nitrate in drinking water at levels above 10 mg/L is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in a serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 10 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.

What can I do to conserve water?

There are many things you can do to conserve water. Running your clothes washer and dishwasher only when they are full can save up to 1,000 gallons a month. Watering your lawn and garden in the morning or evening when temperatures are cooler will help minimize evaporation. Shortening your shower by a minute or two can save up to 150 gallons per month.

Turning off the water while you are brushing your teeth can save up to 25 gallons per month. Also, take time to review your water bill on a regular basis as this can help you quickly realize if there are leaks in your system.



Monitoring Results

Definitions

In the table, you may find unfamiliar terms and abbreviations. To help you better understand these terms we've provided the following definitions:

Action Level (AL): The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.

Maximum Contaminant Level or MCL: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal or MCLG: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level or MRDL: the highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal or MRDLG: the level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: not applicable

Nephelometric Turbidity Unit (NTU): measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

ND (Not Detected): indicates that the substance was not found by laboratory analysis.

NS: no standard

Parts Per Million (ppm) or Milligrams Per Liter (mg/l): one part by weight of analyte to 1 million parts by weight of the water sample.

Parts Per Billion (ppb) or Micrograms Per Liter (µg/l): one part by weight of analyte to 1 billion parts by weight of the water sample.

PDWS (Primary Drinking Water Standard): MCLs and MRDLs for contaminants that affect health, along with their monitoring and reporting requirements and water treatment requirements.

PHG (Public Health Goal): the level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California EPA.

Picocurie per liter (pCi/L): measure of the radioactivity in water.

TON (Threshold Odor Number): a measure of odor in water.

Treatment Technique (TT): a required process intended to reduce the level of a contaminant in drinking water.

µS/cm (microsiemens per centimeter): a unit expressing the amount of electrical conductivity of a solution.

Inorganic Contaminants

Contaminant (Units)	Violation Y/N	Average	Range	Sample Date	PHG (MCLG)	MCL	Likely Source of Contamination
Arsenic (ppb)	N	2.75	2.6-2.9	2016	0.004	10	Erosion of natural deposits; runoff from orchards; glass and electronics production wastes
Barium (ppm)	N	0.036	ND-0.072	2016	2	1	Discharges of oil drilling wastes and from metal refineries; erosion of natural deposits
Fluoride (ppm)	N	0.13	0.12-0.14	2016	1	2.0	Erosion of natural deposits; wa¬ter additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrate (ppm)	N	3.1	3.1-3.1	2016	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

Coliform Bacteria

Collection Date	Highest # Positive	MCLG	MCL	Violation Y/N	Likely Source of Contamination
Monthly 2016	1*	0	1 positive monthly sample	N	Naturally present in the environment

* *One positive sample in November 2016. All other samples were negative.*

Lead and Copper Tap Monitoring

Contaminant (Units)	Number of Sites over Action Level	90th Percentile Result	PHG (MCLG)	Action Level	Sample Date	Likely Source of Contamination
Copper (ppm)	4/52	0.29	0.3	1.3	2014	Corrosion of household plumbing systems
Lead (ppb)	0/52	0.0025	0.2	15	2014	

Disinfectants and Disinfection By-products

Contaminant	Violation Y/N	Highest Level Detected	Range	PHG (MCLG)	MCL	Sample Date	Likely Source of Contamination
TTHM [Total Trihalomethanes] (ppb)	N	2.5	ND-2.5	NA	80	2016	Byproduct of drinking water disinfection

Secondary Contaminants and Unregulated Constituents

Contaminant (Unit)	Secondary MCL*	Average	Range	Sample Date	Likely Source of Contamination
Bicarbonate (mg/L)	NA	110	110-110	2016	Corrosion of carbonate rocks such as limestone
Calcium (ppm)	NA	27.5	21-34	2016	Abundant naturally occurring element
Chloride (mg/L)	500	77.5	66-89	2016	Runoff/leaching from natural deposits; seawater influence
Color (units)	15	5	5-5	2016	Naturally-occurring organic materials
Conductivity (umhos/cm)	NA	535	500-570	2016	NA
Hardness (mg/L)	NA	98	76-120	2016	Hardness is the sum of polyvalent cations present in the water, generally magnesium and calcium. The cations are usually naturally occurring.
Iron (mg/L)	0.3	0.395	0.59	2016	
Magnesium (mg/L)	NA	6.6	5.4	7.8	Abundant naturally occurring element
Manganese (µg/L)	50	10	ND-20	2016	Leaching from natural deposits
pH (units)	6.5-8.5	8.25	8.1-8.4	2016	Measure of corrosivity of water
Potassium (mg/L)		3	2.7-3.3	2016	
Sodium (mg/L)	NA	72	70-74	2016	Sodium refers to the salt present in the water and is generally naturally occurring.
Sulfate (mg/L)	500	16.5	16-17	2016	Runoff/leaching from natural deposits; industrial wastes
Total Alkalinity as $CaCO_3$ (ppm)	NA	110	110-110	2016	Naturally occurring soluble mineral salts
Total Dissolved Solids (mg/L)	1,000	305	280-330	2016	Runoff/leaching from natural deposits
Turbidity (units)	5	2.15	1.5-2.8	2016	Soil runoff

* *Secondary MCLs are non-mandatory water quality standards that are not enforced by the EPA. They are established only as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color and odor. These contaminants are not considered to present a risk to human health at the Secondary MCL.*

The City of Exeter is not required to test for all contaminants on an annual basis. Some of our data, while accurate, is more than one year old.

2017

Annual Drinking Water Quality Report

PWS ID# CA5410003

How can I learn more about our drinking water?

If you have any questions about this report or concerning your water utility, please contact Daymon Qualls, Director of Public Works, by one of the following methods:

- Call the office at (559) 592-3318
- Write to PO Box 237 Exeter, CA 93221
- Send email: marroyo@exetercityhall.com

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

2017 Annual Drinking Water Quality Report

The City of Exeter is pleased to share this report with you. This report is a summary of the quality of the water we provide our customers. The analysis covers January 1 through December 31, 2017, and was made by using the data from the most recent U.S. Environmental Protection Agency (EPA) and California Department of Public Health (CDPH) required tests and is presented in the attached pages. We hope this information helps you become more knowledgeable about what's in your drinking water.

Where Do We Get Our Drinking Water?

The City of Exeter receives its water from underground aquifers that flow in a southwestern direction from the Sierra Nevada Mountains.

Source Water Assessment

Assessments of the drinking water sources for the City of Exeter have been completed on the following wells: E-6W, E-9W, and E-11W in September 2001, E-12W in June 2004, E-13W in August 2007, and E-14W in February 2010 in compliance with local and state regulations. The sources are considered most vulnerable to the following activities associated with contaminants detected in the water supply: fertilizer/pesticide/herbicide applications. In addition, the sources are considered most vulnerable to these activities not associated with contaminants detected in the water supply: septic systems in high-density areas, agricultural/irrigation wells, injection wells/dry wells/sumps, metal plating/finishing fabricating, and automobile gas stations.

A copy of the complete assessment may be viewed at City Hall, 137 N. F St., Exeter, Ca 93221. You may request a summary of the assessment be sent to you by contacting the Public Works Department at (559) 592-3318.

Substances that Could be in Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- Radioactive contaminants, that can be naturally-occurring or be the result of oil and gas production and mining activities.

All Drinking Water May Contain Contaminants

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the California Department of Public Health (Department) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. In order for the City of Exeter to ensure it supplies a safe product for its consumers we continually test our water to ensure we exceed U.S. Environmental Protection Agency (USEPA) and the California Department of Public Health standards.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Lead and Drinking Water

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Exeter is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Nitrate in Drinking Water

Nitrate in drinking water at levels above 10 mg/L is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in a serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 10 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.

What can I do to conserve water?

There are many things you can do to conserve water. Running your clothes washer and dishwasher only when they are full can save up to 1,000 gallons a month. Watering your lawn and garden in the morning or evening when temperatures are cooler will help minimize evaporation. Shortening your shower by a minute or two can save up to 150 gallons per month.

Turning off the water while you are brushing your teeth can save up to 25 gallons per month. Also, take time to review your water bill on a regular basis as this can help you quickly realize if there are leaks in your system.

Monitoring Results

Definitions

In the table, you may find unfamiliar terms and abbreviations. To help you better understand these terms we've provided the following definitions:

Action Level (AL): The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.

Maximum Contaminant Level or MCL: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal or MCLG: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level or MRDL: the highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal or MRDLG: the level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: not applicable

Nephelometric Turbidity Unit (NTU): measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

ND (Not Detected): indicates that the substance was not found by laboratory analysis.

NS: no standard

Parts Per Million (ppm) or Milligrams Per Liter (mg/l): one part by weight of analyte to 1 million parts by weight of the water sample.

Parts Per Billion (ppb) or Micrograms Per Liter (µg/l): one part by weight of analyte to 1 billion parts by weight of the water sample.

PDWS (Primary Drinking Water Standard): MCLs and MRDLs for contaminants that affect health, along with their monitoring and reporting requirements and water treatment requirements.

PHG (Public Health Goal): the level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California EPA.

Picocurie per liter (pCi/L): measure of the radioactivity in water.

TON (Threshold Odor Number): a measure of odor in water.

Treatment Technique (TT): a required process intended to reduce the level of a contaminant in drinking water.

µS/cm (microsiemens per centimeter): a unit expressing the amount of electrical conductivity of a solution.

Inorganic Contaminants

Contaminant (Units)	Violation Y/N	Average	Range	Sample Date	PHG (MCLG)	MCL	Likely Source of Contamination
Arsenic (ppb)	N	2.75	2.6-2.9	2016	0.004	10	Erosion of natural deposits; runoff from orchards; glass and electronics production wastes
Barium (ppm)	N	0.036	ND-0.072	2016	2	1	Discharges of oil drilling wastes and from metal refineries; erosion of natural deposits
Fluoride (ppm)	N	0.13	0.12-0.14	2016	1	2.0	Erosion of natural deposits; wa¬ter additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrate (ppm)	N	3.1	3.1-3.1	2017	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

Coliform Bacteria

Collection Date	Highest # Positive	MCLG	MCL	Violation Y/N	Likely Source of Contamination
Monthly 2017	1*	0	1 positive monthly sample	N	Naturally present in the environment

* During the time period from November - December 2017 no samples were taken for two weeks. Appropriate and timely public notifcations were made.

Lead and Copper Tap Monitoring

Contaminant (Units)	Number of Sites over Action Level	90th Percentile Result	PHG (MCLG)	Action Level	Sample Date	Likely Source of Contamination
Copper (ppm)	4/30	0.15	0.3	1.3	2017	Corrosion of household plumbing systems
Lead (ppb)	1/30	0.002	0.2	15	2017	

The Division of Drinking Water (DDW), in collaboration with the California Department of Education, has taken the initiative to begin testing for lead in drinking water at all public K-12 schools. In early 2017, DDW and Local Primacy Agencies issued amendments to the domestic water supply permits of approximately 1,200 community water systems so that schools that are served by a public water system could request assistance from their public water system to conduct water sampling for lead and receive technical assistance if an elevated lead sample is found. To further safeguard water quality in California's K-12 public schools, California Assembly Bill 746 published on October 12, 2017, effective January 1, 2018, requires community water system to test lead levels, by July 1, 2019, in drinking water at all California public, K-12 school sites that were constructed before January 1, 2010. As of the time of publication, no schools have requested lead sampling.

Disinfectants and Disinfection By-products

Contaminant	Violation Y/N	Highest Level Detected	Range	PHG (MCLG)	MCL	Sample Date	Likely Source of Contamination
TTHM [Total Trihalomethanes] (ppb)	N	2.5	ND-2.5	NA	80	2017	Byproduct of drinking water disinfection

Secondary Contaminants and Unregulated Constituents

Contaminant (Unit)	Secondary MCL*	Average	Range	Sample Date	Likely Source of Contamination
Bicarbonate (mg/L)	NA	110	110-110	2016	Corrosion of carbonate rocks such as limestone
Calcium (ppm)	NA	27.5	21-34	2016	Abundant naturally occurring element
Chloride (mg/L)	500	77.5	66-89	2016	Runoff/leaching from natural deposits; seawater influence
Color (units)	15	5	5-5	2016	Naturally-occurring organic materials
Conductivity (umhos/cm)	NA	535	500-570	2016	NA
Hardness (mg/L)	NA	98	76-120	2016	Hardness is the sum of polyvalent cations present in the water, generally magnesium and calcium. The cations are usually naturally occurring.
Iron (mg/L)	0.3	0.395	0.59	2016	
Magnesium (mg/L)	NA	6.6	5.4	2016	Abundant naturally occurring element
Manganese (µg/L)	50	10	ND-20	2016	Leaching from natural deposits
pH (units)	6.5-8.5	8.25	8.1-8.4	2016	Measure of corrosivity of water
Potassium (mg/L)		3	2.7-3.3	2016	
Sodium (mg/L)	NA	72	70-74	2016	Sodium refers to the salt present in the water and is generally naturally occurring.
Sulfate (mg/L)	500	16.5	16-17	2016	Runoff/leaching from natural deposits; industrial wastes
Total Alkalinity as $CaCO_3$ (ppm)	NA	110	110-110	2016	Naturally occurring soluble mineral salts
Total Dissolved Solids (mg/L)	1,000	305	280-330	2016	Runoff/leaching from natural deposits
Turbidity (units)	5	2.15	1.5-2.8	2016	Soil runoff

* *Secondary MCLs are non-mandatory water quality standards that are not enforced by the EPA. They are established only as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color and odor. These contaminants are not considered to present a risk to human health at the Secondary MCL.*

The City of Exeter is not required to test for all contaminants on an annual basis. Some of our data, while accurate, is more than one year old.

Engineering Design & Construction Managment

Survey & GIS

Urban Design & Landscape Architecture

Biology & Environmental Permitting

Planning

5080 California Avenue, Suite 220
Bakersfield, California 93309

150 West Morton Avenue
Porterville, California 95326

901 East Main Street
Visalia, California 93292

601 Pollasky Avenue, Suite 301
Clovis, California 93612

2816 Park Avenue
Merced, California 95348

3400 Douglas Boulevard, Suite 190
Roseville, California 95661

QK
Ph: (800) 955-7599
www.QKinc.com